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REVIEWS

METEOROLOGY.

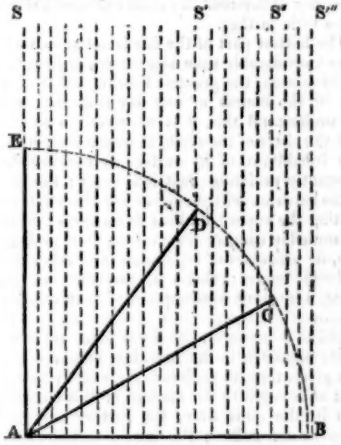
Meteorology considered in its connexion with Astronomy, Climate, and the Geographical Distribution of Animals and Plants, &c. By Patrick Murphy. London, Baillière.

A Treatise on the Causes and Principles of Meteorological Phenomena. By Graham Hutchison. Glasgow, Fullarton & Co.; London, Orr & Smith.

We have long indulged a hope, that such a knowledge of the general principles of science would soon spread abroad, as to ensure to us that some acquaintance with them would be within the reach, and be possessed by, every person in the country capable of reading. If there be one branch of science more than another, which we have endeavoured to place prominently before the public, it has been Meteorology; because it appeared to us of great importance, and to have been especially neglected. The monthly publication of a Meteorological Register, kept under the immediate inspection of men whose distinguished reputation gave it authority as a model for imitation, and the publication, from time to time, of the communications from Sir John Herschel, with which we have been honoured, were, we have reason to know, considered important; especially as directing many how to make and record observations, whose acquaintance with the subject was not deep or extensive, and whose knowledge of collateral science was not considerable, but who, from general intelligence and local circumstances, were enabled to collect and communicate to the philosopher facts of the utmost importance. Persons so situated may frequently contribute valuable information, whose communications, but for such training and example, would have been so overloaded with irrelevant matter and facts, and so interwoven with crude opinions, as to render them useless. But a deliberate perusal of Mr. Murphy's Meteorology has led us to the melancholy conclusion, that there are still persons who, with the best intentions, and with a real desire for the advancement of knowledge, will yet allow themselves to be so carried away with the ambition of system building, and are so blinded by self-deception, as to waste their time and talents, such as they are, in the most absurd and laborious trifling. Mr. Murphy complains directly of "the losses induced by two works he has published on the subject." We trust he will take the opinion now given in the spirit in which it is meant, when we state our firm conviction, that nothing but loss can be the result of his publishing such books as the one before us. It is, from the one end to the other, founded upon "assumptions," which, in many cases, are not even plausible; and where he does venture upon deduction, his logic is, for the most part, of the Tenterden Steeple school.

From Mr. Murphy's work, we turn with much pleasure to that of Mr. Hutchison. This is a sensible, well-executed compilation, interspersed with some new views and explanations of meteorological facts. In the execution of such a work, the arrangement is a matter of the utmost importance; and, although we agree with Mr. Hutchison, "that it is difficult to decide upon what arrangement ought to be adopted," because "several of the phenomena to be treated of are so mutually dependent upon each other," yet we wholly differ from the conclusion at which he arrives—viz. "that in such cases it is immaterial which subject is first considered." On the contrary, we consider it to be most material; and the very difficulties pointed out, are, with us, conclusive reasons why a writer on the subject should, before he puts pen to paper, sit down and consider the question deliberately; and, having once determined on the order in which the phenomena ought to be described, he should rigidly adhere to it: indeed, so important do we consider this, that we have always deemed the arrangement in Daniell's Essays to be one of their greatest merits; and we conceive, that the greatest defect in the volume before us is the want of arrangement. One resulting evil is, that some of the subjects are spun out to a tedious length, and the bulk of the volume is disproportioned to the mass of real materials or of distinct information; while it also becomes difficult to give a clear abstract of the whole, without passing from one part to another with such rapidity as to seem to do the author an injustice. As one illustration of these remarks, we may state, that Mr. Hutchison begins his book with a description of the constitution of the atmosphere, in which he too much intermingles general principles and deductions of science, with the natural history or statement of facts. In our opinion, it would have been an order much to be preferred, to have begun with a slight description of the crust of the earth, on which the atmosphere reposes, and to have first noticed the manner in which the temperature of its several parts is affected by astronomical changes, and by geographical and local varieties of surface. In fact, to have begun with the descriptive parts of the seventh chapter, and to have, for the present, withheld all meteorological deduction except the most immediately obvious. As, however, we are of opinion that we cannot occupy our readers' time more profitably, than by presenting them with a brief sketch of the present state of Meteorology;† we shall use this volume as a text, although we shall take leave sometimes to dissent from our author, and sometimes to depart from him.

The earth, as every person knows, is nearly a sphere, revolving upon its axis in twenty-four hours, and thus causing the changes of day and night, by successively presenting each place of observation to a different aspect of the bodies which surround us on all sides, as they lie scattered about in space. Of these the sun is, to us, the most important, being the source of light and heat. In the course of a year, the earth moves in such a way as to present, during the summer half year, more of the northern than of the southern hemisphere to the sun; during the winter six months, more of the southern than of the northern. The sun, the source of light, heat, and probably other useful emanations, is so remote, that the rays reach any place in a parallel stream, or so nearly so, as practically to be parallel. It hence results, that the quantity of these rays, received upon a circle of a given extent, at any part of the earth—say, a circle of a mile radius—is so much the greater, the more perpendicularly the rays fall upon it. Thus, let S A, S‴ B, and



the intermediate parallel lines, represent that portion of the sun's light and heat which falls upon a circle of the earth's surface of which A B is the diameter. When they fall perpendicularly, the largest body of rays will be received upon the circle, namely the entire column S A B S‴; but when they fall obliquely, as when the surface of the earth is so placed relatively to the rays, that the diameter of the same circle holds the position of A C, or A D, or A E, in the first of these positions the same circle will, in a given time, only receive the body or column of rays S A C S″, in the second position only the rays contained in the column S A D S′, and when it holds such a position as A E, none of the rays will fall upon it, or they will only brush along the surface—in other words, the more acute the angle in which the rays fall upon the surface, the less will be the breadth of the body of rays received in a given time upon a given circle, and therefore the less the effect, *cæteris paribus;* while the more nearly right that angle, the greater will be the breadth of the column, and the greater the effect. Mathematicians call that breadth the *sine* of the angle which the rays of light or heat make with the surface, the radius being A B, and its value may be had from any table of sines for all the several angles, such as S A D, S A C, S A B, which those rays make with that surface. Now, to apply this, at sunrise the circle, in whose heat any inhabitant of the earth is concerned, is placed relatively to the sun's rays in the position A E, and would then be receiving none of the direct heat of the sun; as the sun

† In the first volume of Transactions published by the British Association, will be found, a "Report upon the recent progress and present state of Meteorology," written by Professor Forbes, of Edinburgh. In this Report, which is highly valuable and interesting, will be found copious references to works lately written on the subject, as well as to the more scattered, though frequently most valuable, information to be obtained in the various periodicals of our own country and the continent. In such a Report, of course the details which would suit a systematic work are not to be expected; yet Mr. Forbes has discussed, with much ability and clearness of exposition, some of the more important principles connected with the subject, especially the important discoveries of Dalton concerning the nature and habitudes of mixed gases, and the relation of vapour to the other constituents of the atmosphere; the laborious experiments and valuable discoveries on similar subjects of Gay-Lussac, Clement and Desormes, De la Roche and Berard, Dulong and Petit, De la Rive and Marcet, as well as the mathematical speculations of Biot, Laplace, Poisson, and Fourier on the several subjects connected with the science. It must be confessed, however, that some of the more difficult and embarrassing parts of the subject have been too lightly passed over by the Professor; and it is somewhat difficult to glean from his paper the actual amount of knowledge possessed respecting them.

rises, the angle will be enlarging, or A E will be passing on towards some such position as A D; and at noon on any day, the sun being then highest, the angle made by the rays with the surface will be largest at that place, and the actual heating effect the greatest; from that, as the sun again declines towards setting, as his altitude diminishes, the angle which his rays make with the surface, (which is on the entire, local circumstances being neglected, equal to that altitude,) will also diminish; and at sunset the surface will return to the position A E, relatively to the rays, and the heating effect of the sun will at that place cease until next morning. This is the astronomical cycle of daily heating influence of the sun; and if there were no local diversities of surface, and did no other meteorological causes of change of temperature exist, the effects of this cause alone would be very simple, and would be capable of being subjected to rigorous calculation. But, as matters stand, this cause, although of the utmost importance, is, by no means, the only one in operation, as we shall have occasion to notice hereafter; this, however, not being generally understood, we shall examine the subject a little farther.

The hottest part of the day is not at noon, but some considerable time after noon, although, as we have seen, the greatest heating effect of the sun in the course of any day is at that hour. To understand this, it is necessary to observe, that the circle of the earth, in whose temperature any inhabitant of its surface is concerned, is constantly radiating heat into space; the parts of the earth under the surface are also often conducting the superficial heat downwards; heat is consumed in causing evaporation, most probably, also, in processes of vegetation, and other more variable modes: there is, therefore, at each place, a constant consumption of heat, causing a sinking of the temperature at that place, proportioned to its amount. So soon, then, as the sun, at its approach in the morning, communicates, in a given time, to each locality, exactly as much heat as is equal to the amount of this consumption in the same time, the further sinking of temperature ceases; the lowest temperature of the twenty-four hours is attained. If it were not for the effects of the atmosphere and other meteorological causes, this could not happen on any day until after sunrise; but from all causes combined in these countries, the valuable observations made under the superintendence of Sir D. Brewster, at Leith, and of Mr. Snow Harris at Plymouth, prove that it is, for the most part, attained about five o'clock A.M. From that time, as the heating power of the sun grows greater, the local temperature rises by the excess of his heating power, above all the causes producing a consumption or dissipation of heat, and therefore the temperature still increases, after noon, as long as his heating power—now, however, diminishing—remains greater than the dissipation of heat. As soon as these two opposing effects become equal, the temperature of that place ceases to increase; the maximum temperature of the day is attained. This, in winter, takes place in these countries about one P.M., but in summer, the greatest heating power of the sun at noon being more considerable, the before-mentioned equality does not take place until between two and three, or even until between three and four o'clock P.M.

The changes which take place in the course of a year from astronomical causes are equally simple, and even more important. In summer the sun rises earlier, attains a greater altitude at noon, or at any given hour, and sets later; thus, on two accounts, the entire heating effects of that luminary during the twenty-four hours are much superior in amount to the heat dissipated: first, the sun continues longer pouring down his beams on the place, and is a much shorter time absent. Secondly, his beams on the whole fall more perpendicularly upon the surface, at noon, and at times equally distant from noon, both before and after. Both these causes have the greatest influence at Midsummer, but, for a reason similar to that which delays the greatest heat of the day until after noon, so the greatest heat of the year does not occur until after Midsummer, or the summer solstice; for at that time, and until a considerable time after, the entire heating influence of the sun in the course of a day is greater than the entire loss or dissipation of heat in the same period; the temperature therefore of that locality goes on increasing until what is given by the sun is equal to what is dissipated from all other causes. So soon as this takes place, the greatest heat of the year has been attained, and from thenceforward, the dissipation of heat becoming daily greater than the now diminishing influence of the sun, the total temperature of the day is sinking. In these countries, the temperature goes on increasing from forty to fifty days after the summer solstice, giving rise to a well-known popular period of time called the Dog Days. In other parts of the earth the similar period is very different, according to the latitude of the place. Some of the more important modifying circumstances we shall hereafter allude to. After the time of greatest heat, as the days shorten in comparison with the nights, and the greatest or noon altitude of the sun daily diminishes, his entire heating influence is growing less and less, in relation to the influence of the causes of dissipation; and, at the winter solstice, the disproportion of these opposing influences is the greatest. Yet here again we do not find the time of greatest cold of the year to agree with the winter solstice, but to be delayed beyond it for a considerable number of days, namely, as long as the entire dissipation of heat in the twenty-four hours is greater than the entire heating influence of the sun in the same time. In these countries it is delayed until the latter end of January; but of course the latitude of the place and local circumstances greatly affect the time of this event. The time at which it would occur would be invariable, if the causes of the dissipation of heat passed through a series of changes, as regular in their recurrence as the astronomical changes upon which the variations in the heating influence of the sun depend, and the direct influence of that luminary were the only source of heat at any given locality.

But there are other astronomical circumstances still, of the utmost importance to the meteorologist. In consequence of the Ecliptic, or sun's apparent annual path, being a great circle inclined at an angle of about 23½° to the equator, a band of the earth enclosed between two circles parallel to the terrestrial equator, distant from each other by the double of this number, or about 47°, is so circumstanced that the sun passes each day vertically over some circle of this band, throwing his rays (as upon A B in the preceding figure) with the greatest heating efficacy on each part of that circle in succession; and, from the shape and dimensions of this band, he is never far from being vertically above the most remote part of it; this, as is well known, is called the Torrid Zone, or the space within the tropics. On each side of this lie the two temperate zones, each 43° broad, and extending round the earth: the sun at no period comes vertically over any part of these zones, nor does he ever so far retire from any part of either as to be absent during the entire of any twenty-four hours in the year. Beyond these zones, and surrounding the poles on each side, lie the frigid zones, enclosed by circles 23½° from each pole, and 66½° from the equator on each side. At certain places within these circles, the sun in the summer time never sets during periods extending to entire days, weeks, and even months, according as the place is more within the zone towards the pole; while, on the contrary, he never rises at the same place during a period which would be of exactly the same length, were it not for the effect of the refraction which his rays suffer in passing through the atmosphere, which tends to lengthen the period of his continued appearance, and to shorten the period of his continued disappearance. Now, with respect to the temperate zones, the merely astronomical effects of the sun will be sufficiently understood from what has been already said; but with respect to the remaining zones, and particularly the inter-tropical one, a circumstance still remains to be explained, which is most important as regards its meteorological consequences.

If any person will look at a celestial globe, he cannot fail to observe that the several parts of the Ecliptic, or sun's annual path, lie in a very peculiar mode of arrangement in relation to the equator; the parts near the equinoxes crossing the equator at a very considerable angle, while the parts near the solstices lie almost parallel to the equator, now the sun moves over nearly equal lengths of all parts of this path in equal times. It will be hence readily understood, that if we divide the torrid zone upon the earth into three equally broad bands, the middle band having the equator running along its centre all round, the outer ones lying towards the tropical circles on each side, the sun must shoot across the middle band of these three with the utmost rapidity at the times of the equinoxes, while over each of the outer bands he will continue for a considerably longer period at and about the time of each solstice. This admits of being made still more obvious. Since the entire torrid zone is 47° broad, each of the three equally broad bands, into which we suppose it divided, will be 15° 40′ broad, the circles which bound the middle band will be distant from the equator on each side by 7° 50′; the sun therefore, when he attains a northern or a southern declination, equal to 7° 50′, will be vertically above the one or the other of these circles which bound the middle band. If then we look into the Almanac to the column which gives the sun's declination, we shall find that in approaching the vernal equinox he has 7° 50′ of southern declination upon the 1st of March, and after the equinox he attains an equal northern declination upon the 10th of April. He therefore shoots across this middle band in forty-one days, or about six weeks; he then broods over the northern band of the three during the entire summer, until, upon his return to the autumnal equinox, he again attains the northern declination of 7° 50′, which he does upon the 3rd of September, being a period of no less that 145 days, or nearly twenty-one weeks; from that to the 13th of October, being an interval of forty-one days, he again shoots across the middle band; and then again broods over the southern band until the next 1st of March, being in ordinary years an interval of 138 days, or about twenty weeks. It thus appears that the sun remains about three and a half times as long over each of the outer bands of the torrid zone, which are distant about 1085 miles one from the other, as he does over the middle band; but he is twice in the year over the middle band; the times that he is so, however, being separated by long intervals. One consequence of this is, that the greatest heating effect is removed from the equator towards the tropical circles on each side, while the transition from the one tropical band of the earth to the other is made with such rapidity as to disturb very materially, at the time of the equinoxes, the equilibrium of the

atmosphere which rests upon these parts of the earth; as also to give rise to many of the violent phenomena which occur at the changing or breaking up of the monsoons, or season winds of the Indian Ocean. Other phenomena, too, result in part from hence, which cannot be explained without a knowledge of the constitution of the atmosphere, as to its component gases, and as to the variations of its temperature, and humidity in its several parts, depending upon the laws connected with that constitution. It also exercises extra-tropical influences, many of which it would not be difficult to trace, but some of which are most probably well known in the effects, although the exciting cause is unsuspected. Among these may perhaps be classed that sudden transition from the rigours of winter in very high latitudes, to the verdure of spring, the bloom of summer, and the perfection of the fructification, which is dwelt upon by all travellers as so remarkable, and indeed astonishing: for the parts of the earth near each of the poles in succession, after having been for a great length of time deprived, in whole or in part, of the genial influences of the sun, have these influences restored with surprising rapidity; each pole being presented to the sun with the same rapidity of change as that already shown to be manifested in bringing the tropical band of the torrid zone, from which he had been absent, under his influence. By this also can be explained the prevalence of east and of north winds in the spring of the year in temperate climates.

The earth being surrounded with an atmosphere, which everywhere rests upon, and is supported by its surface, possessing mechanical properties, which are traced and detailed in the science of Pneumatics, a knowledge of these and of astronomical circumstances already explained, without any knowledge of the chemical constitution and relations of the gases which compose the atmosphere, will be sufficient to explain the leading circumstances of the trade winds. The hottest band of the earth, wherever that may be, will heat, and therefore render specifically lighter the air in its neighbourhood; this air will consequently rise up into the higher regions of the atmosphere, while other colder air will flow in from the sides to supply its place. Now, for reasons that have been already alluded to, the warmest band of the earth will in summer lie on the north of the terrestrial equator, and in winter upon the southern side; and in consequence of the great rapidity with which he crosses the equatorial band, it will be towards the end of the summer before the southern band is much colder than the northern, and towards the end of winter before the northern is much colder than the southern: hence the greater part of the torrid zone will be almost constantly a comparatively warm band of the earth compared with the parts lying north and south of it; indeed, since summer is somewhat longer than winter (between eight and nine days), the hottest band inclines constantly rather to the north of the equator. This is rendered still more decided, as we shall see, by the manner in which land and water are distributed over the earth, but it is somewhat counteracted, though in a very small degree, by the circumstance that the earth is nearer to the sun in our winter, or when he is over the southern tropical band, than in our summer. There is, therefore, established from these causes, a constantly ascending current of air at the tropical parts of the earth, while the colder air flows in from the polar regions on each side to supply its place. Now, when a body like the earth revolves on an axis, the parts near the poles of the axis are going round in much smaller circles than the parts near the equator, though both go entirely round in the same time; hence the parts near the poles are moving more slowly, or passing over a less number, say, of miles in the same time, than the parts near the equator. For example, a man standing on the earth's equator is carried eastward, by the earth's rotatory motion, through 1035 miles and 1051 yards every hour; if he stand on any place in the 30th parrallel of latitude, or at 30° from the equator north or south, he will only be carried eastward by the rotatory motion by 896 miles 1602 yards; and, ten geographical miles more to the north or south of that latitude, he will, in the same time, only be carried eastward by 895 miles and 604 yards, being a difference of about a mile and a half in going ten miles north or south from the 30th parallel of latitude; these differences diminish rapidly by going a given distance as we get nearer the equator. If then we suppose the air, as it moves in towards the equator, to pass over the 30th parallel with a velocity of ten miles per hour, it will at the end of the hour be moving less rapidly towards the east by the diurnal motion it retains, than an object over which it blows, the difference being about a mile and a half; a person therefore who encounters it at this latter place, and who is not aware that he is himself moving towards the east, will imagine it to come towards him from the east, at this rate of a mile and a half per hour; it would therefore come to him as from the north and east, or appear a north-east wind, to a person on the northern side of the hottest band, but a south-east to one on the south side; and it will have more of the easterly character the farther it has come from the polar regions. As this air moves on, it acquires more of the eastwardly motion of the earth; and the difference of the motions of the parts over which it blows in a given time diminishing as it proceeds, at length it ceases to appear to blow from the east, and its entire motion appears to be from the north on the north side of the hottest band, from the south on the south side. These, then, coming in opposite directions, stop each other, while they are still separated by a considerable body of air, which remains nearly as dead air between them, and which is sultry, loaded with vapour, and therefore subject, for reasons we shall see, to violent squalls and torrents of rain. The air that ascends into the atmosphere over the hottest band passes off above, towards the poles on each side; and when it descends in the high temperate latitudes, appears as a south-west wind on the north side of the earth, and as a north-west wind on the southern side. These latter, however, are modified by many circumstances which we have not yet explained. The winds between the parallels, which lie nearly 30° on each side of the equator, are so very regular in their phenomena as to be calculated upon in commercial navigation with the utmost certainty; and, from their utility in this respect, they are denominated trade winds. The south-west and north-west winds of higher latitudes, although not so constant, for causes that have been alluded to, are yet the prevailing winds; thus, while the voyage to America takes from forty to sixty days for its completion, the voyage from that country is performed in from eighteen to thirty days, and has been completed even in less time.

The slight account which we have given above of the causes and phenomena of the trade winds, is substantially that of Captain Basil Hall, as given in Daniell's Meteorological Essays. Although it is correct, and excellent as far as it goes, there are two or three other circumstances respecting these winds which these causes do not appear to us adequately to explain. Thus, the trade winds, when first met about the 30th parallel of latitude, are found to blow almost due east, or even to have a little southing on the north side of the line, and to come a little to the north of east on the south of the line; whereas the above causes would lead us to expect them to blow N.N.E., or even N. by E. on the north, and S.S.E., or S. by E. on the south; since, if the motion towards the equator be ten miles per hour, the apparent motion from the east, at these limits, would be only one mile and a half, as we have seen. Again, the southern trades come, on the whole, much nearer to the equator than the northern trades, and sometimes they even come ten or twelve degrees to the north of the line; they vary, however, pretty much with the course of the sun. Thirdly, the variable winds, in the space which is comparatively calm between the opposite trades, blow more often from the south than from the north. The two latter facts are, to some extent, explained by the circumstance before alluded to, that the hottest band of the earth lies rather more to the north upon the whole than to the south. But even this, if rigidly examined, will not be found to afford an adequate explanation. There are, as we conceive, two other simple causes in operation, which, with what we have already said, will, as we think, if fully developed, complete the explanation of all the phenomena. One of these has been alluded to, in our opinion, by Dr. Halley; and some of the expressions in Mr. Daniell's excellent book lead us to think it was floating in his mind; but, undoubtedly, it could not have appeared to him in the strong point of view it does to us, or he would have illustrated it in his own excellent way. The other we are not aware that we ever saw the slightest allusion to, by any writer on Meteorology or Natural Philosophy. Since both of these causes are purely mechanical, and do not require any allusion to the chemical constitution of the atmosphere, we shall here submit them to the notice of meteorologists. The first is the constancy of the apparent diurnal motion of the sun from the east towards the west. The second is the propelling effect of the great tide wave, and branch tide waves, of the Ocean, exercised upon the atmosphere which rests upon it, while it constantly, and with great rapidity moves in one direction. We shall slightly glance at the manner in which each of these affects the atmosphere.

If we consider two places upon the earth's surface, one to the eastward of the spot over which the sun is vertical, the other to the westward, and both at a considerable distance, say 1000 miles, from that place, it is obvious that the air on both sides will have a tendency to flow towards the spot over which the sun is, in consequence of the ascent of the heated air at that place; but since, after the lapse of one hour, the sun becomes, by his apparent diurnal motion to the westward, vertical to the place on that side, the air near the first assumed westwardly station, which had been set in motion towards the east during the previous hour, will now be drawn into the ascending column, and therefore the effect of its eastwardly motion will be altogether removed from the lower parts of the atmosphere; and, on the contrary, the motion from the east, when once begun in the air of the eastern station, will, from its inertia, tend to continue its motion until some cause be in operation to stop it. But the air before it, at the station at which we supposed the sun to be at first vertical, is now, at the end of this hour, in motion toward the west also, for precisely a similar reason; the effect of this, therefore, will not be to impede the westwardly progress of the air at the eastern station. Thus, every part of the air which is left to the eastward by the sun in his apparent diurnal progress, will be successively put in motion towards the west, and will tend to continue that motion; on the contrary, any motion of the air from the westward, on that side of the sun, is soon transferred, almost as soon as commenced, to the upper parts of the

atmosphere. On the next day, when the sun is commencing a new diurnal course, instead of finding the air, as we at first supposed, at rest on both sides of him, he now finds it in motion towards the east; the effect of his influence then upon the air to the westward of him, will be to check its eastwardly motion, or to cause a calm at his approach in the morning, or, at most, to cause it to move very gently from the west by the excess, if there be such an excess, of the effect of his influence on this day over the eastwardly motion it had previously acquired. But, whatever it is, the approach of the sun will soon transfer it from the region of the atmosphere next the earth to the upper parts. On the contrary, his effect on the air lying to the eastward, will be to add to the motion it previously had from the east; and this will go on increasing until a state of equilibrium is attained, which will of course depend upon many causes, such as the extreme velocity of ascent of the column under the sun, the obstructions of hills, mountains, &c., which the air may meet in its progress, and the counteracting effect of local squalls, more or less violent, which depend upon causes not so easily reduced to rule as those we are now considering.

In this explanation we have supposed the ascending column to be established at the place over which the sun is vertical, which is equivalent to supposing that spot of the earth to be the hottest: this, we have already seen, is not the case; it is that part of the earth which the sun had passed from one hour to three or three and a half hours previously; but since this place follows the sun with a mean rapidity equal to his progress, the effect upon the entire is just the same. It is also to be remarked, that a similar effect will be produced all along the meridian, passing through and accompanying the sun, at places where he is above the horizon, but, of course, with various intensities, and more or less modified by other causes at each place, as its parallel of latitude is more remote from that over which the sun is vertical. This will account for the calms which are so common on fine evenings in high latitudes, where west winds generally prevail.

The second mechanical cause of the disturbance of the atmosphere which we have alluded to, is the influence of the great and branch tide waves. There are two principal tide-waves in progress at the same time on opposite sides of the earth, and each of these is propagated at nearly the rate of 1000 miles per hour, always in the same direction, viz. in the open ocean from the east towards the west, and branches up the Atlantic from the south towards the north; of course, each must push onwards as well as lift up the air which lies before its progress; and its effect on the air lying behind it must be, as it were, to drag it after it, by leaving it without the support which it before gave, as well as to let it down. These effects tend in both cases to establish an atmospheric current from the east toward the west, in the general mass of the atmosphere, and from the south towards the north, up the Atlantic Ocean; and although these effects are but small at each instant, both because the tide wave is of small height (not more than from seven to eight feet in the open ocean),—as also because the propelling power of any portion of the curve of the tide wave can be shown to bear to its entire progress forward, only the proportion of the square of the sine of the angle which that part of the curve makes with a horizontal plane to unity,—yet its impulses being always in one direction, like small impulses continually given to a pendulum, they would at length generate a seriously destructive amount of motion in the lower atmosphere; but that the amount is so very small, and that there are controlling and modifying causes, such as the mountains of America running down right across the direction of the motion thus caused, the continent of Africa, and other obstructions, in constant operation. It is also to be remembered, that since the tops of these tide waves nearly follow the place of the moon, and that spot in space which is exactly opposite to the moon, and, since this luminary crosses the middle band of the torrid zone with a similar velocity, when compared with her entire monthly course, as that which we have already described as characterizing the motion of the sun: hence the tops of the tide spheroid, or great tide waves, will be oftener at a considerable distance from the equator on each side, than in or near it; also, one is always on the side of the equator opposite to that at which the other is found.

If the entire surface of the earth were of one character, if there were not the varieties of land and water, sandy desert, morass, and rocky ground, mountain, hill, valley, and ravine, as well as land covered with forest and other variety of vegetation; lastly, if the chemical constitution of the atmosphere were not such as it actually is, and did not admit of these changes, which arise chiefly from the state in which water exists in it, the temperature of any place would be a matter of calculation, founded upon astronomical principles, it being only necessary first experimentally to ascertain a few simple facts. The principal astronomical elements upon which the calculation would depend, would be the latitude of the place, and the sun's declination. In the course of the year the sun's declination would run through its entire cycle of changes: it would therefore disappear from the value of the mean annual temperature, and the latitude of the place alone would have to be considered. As matters really are, the problem is much more complicated; and although many of the causes of variation, by having an opposite effect at one time of the year to that which they have at another, have a tendency to disappear, from the mean result of the year, or some other long period; yet others, such as the effects of local and fixed varieties, do not so tend to disappear. A knowledge of physical geography, therefore, is of the utmost importance to the meteorologist. We shall here briefly state the most important of those varieties, but the subject is far too extensive to justify any attempt on our part to do justice to it.

If the entire surface of the earth were supposed to be divided into 2000 equal parts, it is calculated that the land would occupy about 548 of these, the rest being water; giving a proportion of very nearly two and two-thirds water to one of land. But the land is very unequally distributed in the northern and southern hemispheres; the entire surface of the northern being divided into 1000 equal parts, the land occupies 419 of these parts, or nearly one-half of the whole; but the entire surface of the southern hemisphere being also divided into 1000 equal parts, the land only occupies 129 of these, or little more than one-eighth of the whole. Now, first, the mean heating influence of the sun exerted upon the land is much greater than his mean heating influence upon water, and hence the northern hemisphere has a higher mean temperature than the southern; and the hottest band of the earth may be considered as lying more on the north than on the south of the equator. Secondly, the variations of the temperature of the land from its mean, are much greater than the variations of that of the water from its mean. Thus, as Mr. Hutchison informs us—

"The mean annual range of temperature of the surface of the Atlantic, for the temperate zone, is only about 9°, whereas the annual range of temperature for inland continental countries, in temperate latitudes, exceeds 100°. In like manner, in the equatorial regions, the extreme atmospheric temperatures of day and night over the ocean, never exceed 3° or 4°, while upon land the difference often amounts to 9° or 10°. Between the 25th and 50th parallels of latitude, the extremes in the diurnal range of temperature, at sea is only from 4° to 5°, while at Paris it often amounts to 20° or 30°. This great difference in the annual and diurnal range of temperature between land and ocean, is partly to be ascribed to the greater calorific capacity of the latter (the ocean), and partly to its power of preserving uniformity of temperature, by increased evaporation during the heat of day, and by the sinking down agreeably to statical principles, of the upper particles, as they become colder and specifically heavier than those below during night."

To these very judicious remarks we would only add, that the obvious effect of evaporation is to keep down the mean temperature, as well as to diminish deviations from it. The consequence of all this is most important to the meteorologist. In summer, and by day, the land is much hotter than the sea; in winter, and at night, the ocean is generally much warmer than the land. It has been shown, by very accurate calculation, that the mean annual quantity of solar heat received by the earth from the sun would be sufficient to melt a mass of ice fourteen metres thick, spread over its entire surface (a metre is equal to 39.37 British imperial inches). The portion of this heat, which escaped being radiated, or otherwise dissipated at the surface of the land, is conducted downwards, and proceeds onwards towards the centre, the quantity found at successive depths varying with the season; the next year a similarly varying quantity is carried downward, while the quantity of the previous year, which precedes it, is diminished, part of it having been conducted back towards the surface in the meantime; and so on; and in some places a number of even twenty such alternations can, it is said, be traced before they have diminished so far as to be distinguished no longer; but the depth of these below the surface does not probably anywhere exceed one hundred feet. They are, at a certain depth, met by the central, or what may be called the native heat of the earth, in its outward progress; and it has been also calculated, that the quantity of this which issues from this central store of heat, at each part of the surface of the earth, is as much in its mean quantity, in one hundred years, as would melt a mass of ice three metres in thickness, extending all over the surface. The sea, it is obvious from the nature of water, will have very little tendency to conduct downwards the solar impressions; but it must unquestionably transport to the surface the interior heat much more rapidly than the cohering parts of the earth's crust can conduct it outwards through the same distance. It also carries downward the superficial strata, when cooled beyond a certain limit. The rate at which the central heat increases, as we descend below the surface of the earth, has not as yet been determined with sufficient precision; but it would appear, from a comparison of the most accurate observations hitherto recorded, to be, in its mean quantity, about one degree of Fahrenheit for a descent of fifteen yards, or forty-five feet.

The determination of the mean temperature of any place has been a problem, of which the importance has been long acknowledged by meteorologists. Formulæ have been devised for calculating it; but it must, we think, be admitted, that all we can expect from such formulæ is an approximation, which will be nearer to the truth, or more remote from it, in consequence of many local circumstances which no formulæ can embrace. One of the earliest attempts to subject this element to calculation, was that of

Mayer—whose rule was, to multiply the constant number 84.2 (the mean temperature of the equator) by the square of the co-sine of latitude; the product he considered as the mean temperature at that latitude. Sir David Brewster subsequently showed that the simple process of multiplying 81.5 Fahrenheit by the co-sine of the latitude, would agree much better with the deductions of Humboldt, in his essay on Isothermal Lines; and he afterwards communicated to Professor Forbes a formula still more nearly representing the results of actual observation, especially in Europe. In this formula, the sum of the greatest heat of the equatorial band, and the least heat of the parts near the pole, is to be multiplied by the products of the square roots of the sines of the two distances of the place, whose mean temperature is required, from the two cold poles of the earth, pointed out by Humboldt; and to the product add the least heat of the polar regions, and the sum will be nearly the mean temperature required.

But it is freely admitted that such results as these, however useful as approximations, are yet greatly modified at various places by local circumstances. Some of the diversities arising from the surface being land or water, have been already alluded to. Extensive woods and forests, by the shade they cast, that is, by interposing between the solar heat and the earth, by the quantity of water they evaporate, by the gases they develope, and probably in other ways, greatly affect the mean temperature of a country, their tendency being to depress it. Mountains affect it very much—partly from circumstances which can only be understood when the chemical constitution of the atmosphere is known, and the relation of its constituents to heat and to electricity well understood. But they interfere in many ways with solar heat, and cause a diversity in its mode of reception from that which would take place were the surface level. In the first place, the southern sides in these parts of the earth, both themselves receive a greater proportion of the solar heat, and radiate more of it to the places in their neighbourhood; while the parts having northern aspect, receive less and radiate less; they also receive less by radiation from surrounding localities. The power of the sun to communicate heat upon their summits, is much greater than his power in the lowlands; while on the other hand, bodies on the summits of mountains radiate their heat into space much more freely than the same bodies similarly circumstanced in all other respects, but placed in the low lands. This was very decidedly proved by Captain Sabine while at Jamaica. The stations which he selected for his observations were—the lower one on the glacis of Fort Charles, elevated only eight feet; the upper one on a plateau near the summit of Port Royal Mountains, at an elevation of 4080 feet above the level of the sea. A thermometer with a blackened bulb exposed during six days to the sun's influence at the level of the sea, did not rise, upon any occasion, more than 36½° above the temperature of the surrounding atmosphere: the same thermometer, similarly exposed at the upper station, rose in one day 59° higher than the surrounding atmosphere; the air at that elevation having its temperature diminished by 13°. Also, a thermometer exposed to the clear sky at night, at the lower station, fell, on an average of seven nights, 9° below the indication of a thermometer protected from radiation into space. The same thermometer, similarly exposed during a single night at the upper station, fell 18° below the protected thermometer. The circumstance also, whether a tract of country be in a high state of cultivation, or lying waste, is of much consequence in its influence on the mean temperature, but this subject we cannot enter upon, before the relations of the atmosphere to vapour be understood. In fine, the mean temperature of the earth at a given place, is often very different from the mean temperature of the atmosphere of that place. They are only the same at places which have a latitude of about 56°. Near the equator, the earth, at a depth of 82 feet, has a temperature about 4½° lower than the mean temperature of the air; while in Lapland, the temperature of the earth at the same depth, is as much above the mean temperature of the air. Now which of these is most properly to be considered as the mean temperature of the place? Within the tropics, the mean temperature of the ocean is generally higher than that of the incumbent air. In temperate zones, the mean diurnal temperature of the ocean is in summer a little lower than that of the incumbent air: in winter it is a little higher. In polar regions, the difference is greater. But besides this, the temperature of the ocean diminishes as you descend below the surface, from the equator to about the 70th degree of latitude: then it is nearly the same at all depths; in still higher latitudes it increases as you descend, neither the law nor the quantity of these changes being as yet entirely known. Yet every one of these circumstances is of consequence, when considering the mean temperature of particular localities. While upon this subject, we must say that, although we strongly recommend, to all who have the opportunity, to note and record accurately the temperatures of the water whose source is at a considerable depth in the earth, as well as of caverns and excavations, whether natural or artificial; yet we would remind persons commencing these pursuits, that the application of these data to the determination of the mean temperature of the place must be made with many precautions: thus, the phenomena of Artesian fountains evince that the central heat of the earth is more concerned in giving temperature to the waters of springs than is consistent with the assumption that from them we have an approximation to the mean temperature of the place. In some mines also—such as the silver mines of Norway—it has been found, that when the air within them is suffered to remain stagnant, the cold air of winter, which comes over their mouths, falls down into them, while the warm air is allowed to pass on; and this has been found to cause such a fall of temperature within them, as to convert much of what had been lakes of water into solid blocks of ice, when the temperature of the rocks and earth of the mine were much above the freezing temperature. Something like this must also tend much to lower the mean temperatures of valleys, ravines, and large fissures, which are so encompassed with hills, as very much to land-lock the air within them.

We shall next week advert to the more important circumstances connected with the pneumatical and the chemical constitution of the atmosphere, and the relations of its constituent parts to one another, and to heat, electricity, and other modifying causes.

The Basque Provinces. By E. B. Stephens, Esq. 2 vols. Whittaker.

Our English youth, availing themselves of the long vacation, may now steam across the British Channel, step over the Spanish frontier, and enjoy the excitement of the battle field, with little more exertion than was required not long since to transport them to the *Café de la Régence* for the overlooking a match at chess; and, if wise in their generation, they may return to London in time for "the season," each with a book in his knapsack, like Mr. Edward Bell Stephens! We do not desire, by what is here said, to disparage the lively, but superficial works which the holiday-keeping politicians have poured out upon us, somewhat remorselessly, ever since the Spanish quarrel began, and which would be welcome enough, as containing passing sketches of the contest, were they not wrested into oracles by the perverse spirit of party politics. Mr. Stephens is neither better nor worse than his brethren; he entered Spain to pick up news for the *Morning Post*, joined the Carlist army as a spectator, and enjoyed himself mightily, as his book records, in a style amusing enough, though somewhat flippant. Of course, he finds "good in everything." Carlos Quinto is the pink of simplicity and affable condescension; his generals a splendid set of dare-devils in the field, and at the mess-table "most honourable men"; the army faithful to death, and performing prodigies in the way of industrious labour, as well as of brilliant achievement. The Christinos, on the contrary, are cowards, having all of them thirst for blood; and the British Legion hardly worth a gentleman's sullying his fingers to write about. These opinions and principles being premised, we will now make a few extracts—and first of the Basques.

"I have heard and read much of Spanish idleness, but as far as my observation goes, it does not justly apply to the Basque peasantry. Every available inch of ground of the Bidasson valley is cultivated with the hoe. Attached to each little farm-house along the *escalier* track (where car or charette was never seen, and where all must be carried on mules' or men's backs) is a limekiln, and in most instances not a small one, to enable them to prepare that valuable manure for their maize-ground. I saw it laid on near Saline with an unsparing hand. The limestone for this purpose is brought from a quarry over the hills opposite Behobia, at the very mouth of the valley. Various mine-holes are to be seen where they have driven into the slate rocks in search of copper ore, and the mineral bearings strewed about the road indicate that the search was not made in vain. As we crossed the river with our mules in a ferry boat (the guide-rope of which consisted of plaited vine-stalks), a Carlist *douanier* stepped down to the landing-place to look after his portion of affairs of state; but instead of sword or gun he carried in one hand a hoe, with which he had been dressing his maize plantation, and in the other a set of night-lines ready baited for the eel fishery. Little mills overhung the bank, the plate-like wheels of which spun horizontally as the water-spout splashed thereon—thus enabling the upright axle-shaft to turn the millstone without additional gear, and making the most of the fall."

Here are a few other passages, which exhibit them to advantage as agriculturists.

"In a ride from Estella to Durango the greatest possible variety of soil prevails, but everywhere the husbandman was found turning it to account to the best of his ability. The exceptions were few and far between, and so striking as in a manner to establish the rule. His plough is indeed a poor instrument, possessing but the rudiments of a share and mould-board with a single stilt, but the ground he drives it through is easily stirred as deep as suffices to give him a generous crop, which amply repays his labour. I cannot speak of the goodness of the millet crop by comparison, but the wheat and barley are equal to any that England can produce with double labour. The latter is chiefly reserved for feeding mules and horses, especially in Biscay, where the cultivation of oats falls off. But the maize is planted everywhere and eaten everywhere: not that it is a grain preferable either for a marketable crop or for diet, but it stands as a friend in need which will thrive amongst mountain mists, rocky steeps and lowland marshes, salt or fresh, where the plough could not go, or where other corn would perish; and, whether its grain ripen or not, will certainly afford a luxuriant crop of forage. * *

"On descending from the high table land of Navarre and Alava through the renowned pass of Salinas, along the banks of the river Deba by the great road from Alava in Guipuscoa, new features appeared. Here the turnip and clover culture began, and the

wheat was discontinued. Not a plough was to be seen, all the work being performed with the spade-fork and hoe; and it is surprising to observe the quantity of ground which even one man can turn up with a pair of the former, working both together, one with the right hand and foot, and the other similarly with the left. But when a dozen men club their forks to turn over a field, the superiority of this mode of culture is seen most strikingly. Standing in a line, they strike them down perpendicularly,—then pull altogether, and turn over a sod that would astonish an English ploughman. Stepping back, they repeat their combined movement, and thus a field is rapidly and deeply tilled. The heights of Arlaban above our road exhibited on either hand the rare sight of pastures ever verdant from the constant supply of moisture from the low-sailing clouds (notable in the dispatches of General Evans as 'the fogs'). The vines, no longer able to ripen a-field, creep up the cottage balconies and hang in festoons. Further on, near the town of Mondragon, roses grow luxuriantly, and the narrow valley for miles seems one garden. At the upper entrance by the camp of Arlaban, a few burned houses mark the route of the Anglo-Spanish forces on their disastrous attempt to penetrate this fortress-valley. Below all was smiling security, peace, and plenty. * *

"The aromatic herbage of Alava presents a rich field for the range of the honey-bee, and houses actually full of hives constructed of large hollow logs of timber built into the wall, were to be seen perched in most picturesque situations under jutting crags, which rose over head like steeples, or stood out like horses rearing and ready to start from the cliff. Portions of these rugged rocks and their herbage presented most fantastic profiles and figures of men and animals. A fine young French mule on which I rode, seemed very much puzzled with the appearance of the country, as the steep and narrow mountain tracks sometimes brought us to a sharp turn over the edge of a torrent, sometimes to a natural wall of rock, up which we were to climb as best we might; sometimes the strand descended to the road—(I say *descended*, for all above was crumbling shingle that strewed the road like a sea-side scene, except that the fragments were not rounded,) sometimes the road dipped into the bed of the river. At times it led through a ravine where we could not see many feet before us; then a little further on, a splendid panorama opened around. Sometimes a path led right over the height of a mountain (like the Roman roads in Wales, to prevent ambuscades) which afforded the most splendid views; but these are precisely the land marks of the bees as they journey over the provinces, where they assemble in such inquisitive crowds that it was impossible to adjust a telescope in their company. My mule, who had an eye to the picturesque, kept me constantly on the *qui vive?* She saw a thousand strange shapes in the fantastic rocks and roots around and above her."

We must make room, too, for "a picture in little" of the Arragonese,—a fair specimen of the author's style.

"I had constant opportunities of becoming acquainted with their figures, features, gait and gestures, and I must say that a more extraordinary set of recruits I never saw in my life. They almost defied classification, even with the aid of the drill-serjeant, the army tailor and the armourer. Their muskets and bayonets were all new and bright, their cartridge belts sat tightly, their brown surtouts hung comfortably around them, tho' without any pretensions to a fit, and their raven black heads of hair preserved something like an appearance of uniformity despite their many shaped *boynas*, hats, handkerchiefs, turbans and night-caps, and in many cases, the absence of all head-gear; but in every other item of military concord they differ most whimsically, appearing on parade in shoes, slippers, leggings, boots, or sandals. Men of mature age stood beside boys; giants (and well made giants too) overlooked short, broad-shouldered pigmies, who reminded one of Scott's 'Black Dwarf.' Some were fine loose-limbed fellows; others, compact and strongly knit; others, meagre and wiry. Their features varied so much, they seemed to be brought from the antipodes. Lads with snipe faces stood side by side with men of uncertain ages, whose cheek-bones of Calmuck breadth astonished the beholder. Here aquiline features harmonized with fierce mustachios, and there the opposite Milesian and beardless concavity of profile made the beholder imagine that he was gazing on an emigrant from the county Galway. It appeared evident at first sight, that the kingdom of Arragon was not peopled by a single race. Probably each valley sends forth a tribe as distinct in origin as in features and stature. The Navarrese affect to contemn them all, (every kingdom of Spain looks down on the other,) and to convey an estimate of their capacity in the following story:

"An Arragonese *muletero* came to a broken bridge, which the animal he drove would not pass, either for beating or coaxing. Tired out at length the driver exclaimed, 'God may have given you more sense, but he has given me more strength,' and taking the beast up in his arms, he carried him across."

Here is a lively sketch of a Carlist battalion on march.

"The Spaniards have a natural taste for music. Night or day, wherever they go, even if only three or four are together, one is sure to be found able to give out a marching song, another to sing a second, and the others to join in the chorus. The march of one of these merry battalions over the mountains, is a sight worth going thither from London to see. The rain beats on them—they don't mind it, but sing all the merrier, as if like ducks, they rejoiced in the drops. One fellow carries the soup cauldron of the company, and is obliged to stop occasionally to lighten his load by spilling out the rain. Many have taken off their coats, and slinging them across their breast, leave their backs exposed, and thus face the storm. The sleeves are thereby untenanted, but the Carlist loves his musket as if it was an arm of his body; so he thrusts the butt and lock up into the sleeve, and jogs on, a comical figure, as if he held up his elbow in defiance or derision of the clouds that drenched him. 'There goes an officer without a sword! How happens that?' 'O, he broke it in the last assault on San Agustin; but he's going into battle, and he'll soon find another!' One happy national trait counterbalanced a hundred wants, grievances, difficulties and misfortunes,—nobody grumbled; everybody was patient, struggled on and hoped for better times. There was seen a spirit approaching closely to what Englishmen would consider levity in the midst of the most important affairs."

The following is a scene from the siege of Bilbao.

"Whilst Espartero was cannonading the Carlists across the Ria Asua (the first time,) sportsmen on the opposite hills were popping at hares and woodcocks, and knocking them down with *Viv' el Rey!* It was amusing to see how quietly the horses and mules who had never been hit, grazed amidst the cannonade; merely smelling the clouds occasionally, and remarking to one another that these mountains were very thundery! The riders too seemed as unconscious or casehardened as their cattle, and would scarcely interrupt their smoking or joking to get out of the way of a Christino cannonade. I confess I thought myself rather in danger at first, but a little experience soon set my nerves right, and convinced me that I ran as much (or as little) risk in one place as in another, so I never afterwards denied myself the amusement of hunting cannon balls to cover, with the rest. It was otherwise, however, when the Royal English artillerymen began to crack Shrapnell shells on our heads two or three days before Christmas eve. After they burst, there was nothing to be found on Archanda, Areagas and Monte de Cabras, but wounds; and, although we were not aware at the time, to whose attentions we were indebted for such striking displays of skill, everybody seemed tolerably satisfied that the only secure plan was to get out of their range altogether, and all who enjoyed any free will in the matter, did so accordingly. Lord Ranelagh in vain made light of the momentary arrivals; inviting his numerous acquaintances to sit and partake of the Christmas cheer that Espartero was sending, as his compliments of the season, across the Ria Asua. No! there was something too pointed (though incomprehensible) in the new Christino practice; no deserters were coming to explain it; and at last, all who were not on actual duty—even those whom I have seen, day after day, sitting smoking unconcernedly or promenading leisurely on the heights of San Domingo while all the town forts were cannonading them, or whom I have observed calmly facing, from morning to night, a guerilla fusillade on the hills of Castrejana, as a thing of less importance than a hail-storm—even they thought it better to smoke somewhere else, just round the shoulder of the hill, where the *cigarro* would not be jerked out of their lips by their horses' nervous start, as the fiery thunderclap came smack at their heads, and the splinters skelped along their quarters, or rattled among their hoofs. Courage is very much an affair of sociability as well as of custom, in man or beast; and so, though no smoker myself, I speedily joined the good company at the sheltered side, where a hearty laugh welcomed the fresh arrival of every idler. Nobody thought of asking, 'Are you wounded?' but numbers inquired 'Did your horse escape?'—Such is a camp! Death is nothing;—a wound is a matter of course, to be borne with fortitude; but a good steed disabled is a serious annoyance: '*Carajo! Demonio!* 'Tis d—nably vexatious!'"

After the siege of Bilbao Mr. Stephens quitted Spain. He entered it on the 3rd of September 1836, and on the 13th of January 1837 he had returned to Bayonne. His work, therefore, must be considered merely as a journal of a three months' tour; and so considered, it is not without its full complement of information.

GUIDE BOOKS.

The Tour of the Don, &c.—Memorials of Shrewsbury, &c. by Henry Pidgeon.—*A Guide through the Town of Shrewsbury.—Hints to Pedestrians; or, How to enjoy a Three Weeks' Ramble through North and South Wales.—Woolwich, and its Environs.*

THERE is too much of that spirit abroad which would make an end, by sneering or compulsion, of all conveniences ministering to the enjoyment and improvement of the many—which cries shame upon "the steam-boat and omnibus nuisance," and shrugs up its shoulders at the travelling mania, so largely prevalent among our middle classes. To us this increasing desire to be up and stirring—to keep holiday anywhere save by the fireside of a favourite club-house or tavern, is a sign betokening anything rather than a decrease in rational and healthy taste. Our English nobility have been long known as over-runners of Europe and Asia; our English squirearchy have, for some years, wisely followed the example of the Montagus and Walpoles, and become familiar with the treasures of art and nature in Germany, Italy, and France; yet there appears little danger of absenteeism finally depriving us of our friends and fellow-citizens. Meanwhile, our English *people* are beginning to make a descent on neighbouring towns, to find a stroll up the hill that looks blue in the horizon, or along the stream that turns the wheels of their manufactory, a pleasant recreation. It is delightful to believe, that in producing this change, commerce and machinery have done their part. A chance word concerning the grandeur of York Minster, or the trim gentility of Cheltenham, or the laughing beauty of the vale of the Severn, let fall by some man of business on his return home, has inoculated many a younger brother or fellow clerk with a desire to go forth and see, with his own eyes; while canals, and post-roads, and railways, so much reviled for destroying the ancient and pastoral stillness of the country, have, by offering him a cheap conveyance, and means of speedy return, tempted many a pale, toil-bent creature from his desk, to be freshened and humanized by making acquaintance with new haunts of nature or of men, hitherto inaccessible. Thus does Poetry, if driven from the cloister and the cell, provide herself a new residence, and open a new and wider mission, by the means of the very antagonists that have expelled her from her ancient home.

These thoughts, which have frequently crossed our minds, especially since summer skies and sun have been inviting us to ramble, are now called forth into print by the appearance of a heap of Guide Books, as true to Midsummer in their coming as the Annuals are to the first of October. Could we doubt the beneficial influence of the migratory spirit, we should have been re-assured of it by the marked change and improvement which have passed over these little works.

Some of them are pleasantly written: with here an historical reminiscence, there a biographical notice—in another page a few pertinent words, perhaps, concerning Lord ——'s fine collection of pictures, or his flower-garden. Some are tastefully illustrated; all more carefully and genially *got up* than their predecessors. Here, for instance, are two little brown-clad volumes containing a *Tour of the Don*—a series of sketches made during a pedestrian ramble along the banks of that river, and originally published in the *Sheffield Mercury*. This tour was planned in a right spirit, and has been executed pleasantly. Let us see what temptation the Don holds out for those who know not how better to dispose of a few stray days in "the long vacation." The Don rises on the backbone of England, on a patch of moorland some sixteen miles from Sheffield, not disturbed since the days of the Conquest, and called "Green Moor;" and the "Tourist" describes, in poetical language, the scenery surrounding its sources. Passing Thurlstone, with its old flour-mill, (the written picture of which brings Tennyson's ballad to our mind,) the author notes the cottage where blind Dr. Sanderson, the celebrated mathematician, was born; adding, "popular tradition ascribes the attainment of a knowledge of letters by the blind boy, to his habit of passing his fingers over the inscriptions on the gravestones in the church-yard of Penistone." Then we get a glimpse at the same church-yard; ere long we reach Wortley Mills, which were supplied with charcoal from Wharncliffe Chase, about the time of Queen Elizabeth; and we next are among the woods of that noble domain;—the Tourist being full of reminiscence and tradition, quoting Lady Mary Wortley Montagu's graphic description of the scene, and Taylor the Water-poet's account of his adventure in that place, wherein he tells how "his Worship brought me to a cave or vault in a rock, wherein was a table with seats and turfe cushions round, and in a hole in the same rock was three barrels of nappy liquor. Thither the keeper brought a good red deere rye, cold roast mutton, and an excellent shooing-horn of hanged Martinmas biefe: which cheer no man living would think such a place could afford: so after some merry passages and repast, we returned home."

The next chapter is full of pleasant gossip concerning the Dragon of Wantley, and More of More Hall. Till we read it, we had thought that the champion who, as the song says, was

> —a man every inch, I assure ye,
> Stout, vigorous, active and tall,

belonged to another Moor Hall, near Ormskirk, in Lancashire. Passing some forty pleasant pages, we are at Beeley Wood—next at Sheffield; close to which town the Don is joined by the Loxley and the Rivelin; on the latter rivulet there are about a score of grinding wheels:—

"These afford opportunities for inspecting the machinery used for giving edge and polish to cutting instruments, upon what may be deemed nearly the primitive model. * * The rapid whirling motion of the stones, buffs, &c., is derived (through intermediate cog-wheels and drums) from bucket-wheels, the bulk and slow revolution of which are generally pleasing to the eye; while the low, intermitted splash of the water upon the bucket-boards, as heard in the stillness of the evening, produces a no less pleasing effect on the ear, especially when harmonised by the consideration, that those sounds of liquid impact are the pulses of a powerful natural agent, unwearedly beating in aid of the labours of man. It were impossible to witness the prodigious velocity with which one of these grindstones revolves, and not to be struck with the jeopardy in which the workman's life must be placed should one of them break while thus in motion. The fact is, that loss of life from this cause does sometimes occur, the splitting stone not only tearing up the grinder's seat, strongly as it is chained down, but the fragments, in some instances, actually passing through the roof! * *

"The grinders themselves are often the most striking accessories of the scene, in a pictorial point of view. 'They are,' to adopt the words of a highly graphic describer, 'nearly the only inhabitants of the valley, and they do not reside in it. There is scarcely a dwelling-house throughout the whole length of it. They are a rough, half-civilized class. Removed thus from the restrictions of society, and the observation of all authority, they associate only with each other. In summer, when the mountain streams which feed their infant river are almost dried up, they have not a supply of water to employ them half their time. As, however, it is uncertain when the uppermost dam will be sufficiently filled to enable the wheel to work, and to dismiss the fluid element to the expecting wheels below, they are under the necessity of being upon or near the place, to take advantage of the supply when it does arrive. At those times, groups of human beings may be seen near every wheel, which, taken with the surrounding scenery, form such subjects as are well fitted for the pencil of a Salvator. * * You there see them, some seated on the stone-raised, turf-covered bench at the door, with their copious jug and their small pots, handing round the never-cloying English beer; others reared up against the large round grinding-stones supported by the walls of the building; others, again, seated on the same kind of stones, lying upon and against each other on the ground, whilst some are stretched at their length, dozing or contemplating, in the verdant sloping banks of the mill-dam; some are amusing themselves with athletic exercises, and others are devising, or slyly engaged in executing, some rude practical jokes. At times you may perceive, as an exception to the general habits, a solitary wandering ruminator with a book, but much oftener with a pipe."

To offer any notice of Sheffield, its wonders, and its worthies, "excels our power," and we can only refer the reader to the Tourist's pages, for glimpses of James Montgomery and Ebenezer Elliott, whose writings, by the way, appear to have had the effect upon his townsmen desired by the author, namely, to turn the attention of those employed in mechanical labours to the natural objects which surround them. After Sheffield we pass Attercliffe—Rotherham—every step suggesting some name known in literature or mechanics. We are now in the country of 'Ivanhoe,' at Coningsborough Castle, where the death-wake of Athelstane the Unready was held—thence, the river, enriched by the tribute of the Dearne, sweeps past Sprotborough—Balby, the frequent scene of George Fox's early preachings,—and arrives at Doncaster. Here the Tourist pauses to look about him—quotes from 'The Doctor,' and tells us that its author is Dr. Southey, of which we have some doubts. From Doncaster to the place of its junction with the Ouse, the river is less interesting; and we shall therefore leave it, with a kind parting word for the author, who has certainly succeeded in interesting us in the district over which he has guided us. Why should not the same thing be done on a more extensive scale?—why not give us "The Rivers of England"?

We are stirred up to this recommendation by the thoughts of another stream, of which two books on our table remind us—*A Guide through the Town of Shrewsbury*, and *Pidgeon's Memorials of Shrewsbury*. Each is pleasantly done—a little richer in suggestion than the old "Pictures" and "Guides"—each, too, is illustrated with wood-cuts—the first the best. But we notice them to recommend the vale of the Severn to the summer rambler; a fairer specimen of English scenery he will not readily find, and a pleasanter fortnight could hardly be spent, than one in which, taking some central spot for head quarters,—Admaston, for instance, a scarcely known "Brunnen," which deserves that some Old Man should make it better known—the rambler might make daily excursions, to the Wrekin and Coalbrook Dale, to Buildwas Abbey, a lovely fragment of ruin—and to Hodnet, and Hawkestone, and a dozen other haunted places. We dare not trust ourselves to follow the Severn further; for a fourth little book, a mere pamphlet, *Hints to Pedestrians, or how to enjoy a Three Weeks' Ramble through North and South Wales*—is tempting us to talk about the *Caers* and *Llans* of the upper division of the Principality, and the *Cwms* and waterfalls of the softer south, to say nothing of the richly-wooded and sweeping Wye. The pamphlet in question is unpretending, and contains information; but we have half a mind to be up and away, and do the thing after our own fashion.

And here, passing *Anderson's Tourist's Guide through Scotland*, as a good work, but on the old *literal* plan, we should stop for awhile, did we not feel that we have been talking, perhaps too magnificently, of weeks and of days to some who have merely hours to command—who must rise up and go to rest in this huge, hot metropolis. That we may not conclude without having done something to help these also to their pleasure, we shall add a word or two on a little book which is devoted to a spot close at their own doors, we mean *A Guide to Woolwich*. This is a useful publication—the more so because it is neither costly nor cumbersome, but just such a Guide as is required by the thousands of humble people whom the steam-boats carry there in search of fresh air and a few pleasant hours; and the map which accompanies it will save time, and the necessity for troublesome inquiries. As a specimen of the manner in which the work is put together, we shall make an extract from the account of the Arsenal:—

"After twenty-two years of profound and almost undisturbed peace, during which time many thousands have been condemned and sold, there are still in the Royal Arsenal at Woolwich nearly 24,000 pieces of ordnance, and this is but a small portion of the mighty resources of the British nation. Of the above number nearly 3,000 are of gun metal, and the remaining 21,000 of iron. This mass of destruction is divided into pieces of 202 different natures and lengths. There are also in the Arsenal nearly three millions of cannon balls and bomb shells. * * It is said, that when the allied Sovereigns came to England, and visited the Arsenal, they imagined that some wooden imitations of artillery had been made to deceive them, and when convinced of the reality of the spectacle before them, they could hardly find language to express their surprise.

"The weight of the largest gun known to have been cast in the Arsenal is ninety cwt., and the smallest from two to three cwt. The brass pieces are usually much lighter, the heaviest hitherto cast weighing only thirty-six cwt. There are four air furnaces in the foundry, the largest of which will melt 325 cwt. of metal, a sufficient quantity to cast fourteen guns, and the smallest twenty cwt., which is generally used for refining. * *

"It may not be amiss in concluding this notice of the foundry, to give a brief account of the different processes through which a gun passes before its completion. The mould, a mixture of clay, loam, sand, &c., being prepared of the requisite size, and secured by being strongly bound with iron hoops, is heated red hot in order to evaporate all latent humidity; it is then placed in the earth before the furnace, the cavities around it are filled up with clay, and the metal, when sufficiently heated, is conducted into the mould, and the casting of the gun is completed. The gun is cast solid; the next process is that of boring and turning, which are both performed by one machine and at the same time; a large bit, of the diameter wanted, is firmly fixed, against this the gun revolves, four horses being required to move it, and while the bit is thus by the constant revolution of the gun, cutting away the metal and forming the bore, the other parts of the machine are employed in turning the exterior; after this, the touch-hole being drilled, the gun is complete. It is then minutely and carefully examined in every part; magnifying glasses are applied to its exterior surface, whilst mirrors are made to reflect its interior; its inclination and relative proportions are then tried with mathematical instruments; and lastly, the gun is proved by being fully charged, and fired off at the butts."

The interest of the little work is judiciously increased by occasional anecdotes. Some, to be sure, are apocryphal; thus, we are told that there is a chimney-piece of black marble in the saloon at Sir Thomas Wilson's, at Charlton, which is so exquisitely polished, that "it is said a robbery committed on Blackheath was seen reflected from its surface, by Lord Downe, who thereupon sent out his servants and apprehended the thieves." This, however, is modestly given as an *on dit*, but the following is stated as a fact, and will be no less startling to those who have ever visited the place—"although so many of a generally accounted immoral race of men form a constituent part of its inhabitants, yet *Woolwich is not only comparatively, but actually, a moral town.*"

Moral Axioms in Single Couplets; for the use of the Young in Schools and Families. By Sir Egerton Brydges, Bart. Macrone.

EVERY age is an inheritor of the errors and mistakes of its predecessors; and the greatest efforts of man in society are expended in correcting the miscalculations which originated in a belief of the unerring wisdom of his teachers and seniors. This is a necessary law of our nature, and therefore inevitable: but the evil is increased, and its consequences aggravated, by the want of due discrimination and selection in the business of education. As yet, we have held it to be wiser to insist on the imperfect diffusion of popular instruction, than upon the inferiority of its quality; for, notwithstanding the labours of the better spirits of the day in advocating a combined national effort to render the possession of elementary knowledge universal, great prejudices still remain to be removed, or rather, a tremendous *vis inertiæ* to be overcome, before that much desired object can have a chance of realization. We, however, do not believe, that among our readers there are many who stand in need of admonition on that point. Public attention has been fixed steadily upon it, and we are almost unreasonable enough to hope that the new reign and the new parliament will be signalized by a legislative measure on the subject, worthy of its overwhelming importance, and of the nation from whose wisdom it shall emanate.

With respect to the quality of the thing called education, a greater ignorance and indifference we believe to prevail; and these, we imagine, extend not merely to the forms and means of communicating knowledge, but to the matters themselves selected for communication. Petronius Arbiter complains, that in the schools of Rome, the time and labour of youths were expended upon the acquirement of futilities, bearing little, if at all, upon the common business of life; and, at the present day, the same mistake pervades all our systems of education, from the most elementary to the most transcendental. This is sufficiently obvious, as concerns the education of the intellectual faculties; but the more important business of developing man's moral nature, is, if not wholly neglected, so inadequately and falsely conducted, as to fall completely short of its end. The deplorable defect shows itself in the bare fact, that the idea of education is limited to that instruction which can be conveyed in schools, or more closely still, to what is known by the name of book-learning. Even within the walls of a school, besides the ordinary range of elemental instruction, it is possible to convey a knowledge of many points of household economy, domestic industry, mechanical manipulations, and contrivances, which, while they materially improved the physical comforts of the instructed, and, indeed, *because* they improved their physical comforts, would rectify the habits and feelings on matters of common morality. But, much as can be thus effected, more, very much more, depends upon the moral atmosphere of the domestic hearth; and it would be vain to expect a satisfactory result from any system which, by depriving the parents of the right, and discharging them from the duty of supervision and co-operation, shall deprive them of the greatest excitement to self-control and to individual exertion, of which human nature is susceptible.

In looking to that education which is offered for money to the easy classes of society, it is manifest, that the ignorance or neglect of parents is a pregnant cause of the like bad qualities in teachers; and it is evident, that as long as there shall be found patrons to encourage impudent pretenders in their claims to be schoolmasters, there will not be wanting candidates to partake of the profits. Neither should we expect a better result in our national schools, notwithstanding all the inspection and superintendence of responsible officers, if those most interested in the success of their operations be not encouraged and assisted to observe and understand the manner in which they shall be conducted.

It must require a long lapse of time, employed in the labour of improvement, before the working classes, generally, shall be rendered able to take any direct part in the business of education; but we imagine that, even now, men might be selected from that class who could give valuable assistance in determining the actual wants of the labouring population, the sort of education they require, and the modes in which it could be most readily communicated. As far as we have yet gone, the (so called) educated classes are decidedly unequal to determining these points, even for themselves, much more so for those to whose habits and feelings they are utter strangers. Satisfied as we are, that mere reading and writing should form but a small part of the labouring man's instruction, we are still more so that the higher classes cannot divine the requisite supplement, and that the working population must make some effort to assist them in their search.

Of the strange deficiency of the upper classes in educational ideas, the tiny volume before us is a pregnant example; being, as it is, the production of one to whom literary pursuits have been the occupation of a long life. Sir Egerton Brydges, considering the influence of rhythm in fixing ideas, and more particularly in conveying aphorismal instruction, has set himself the task of laying before very young students a series of couplets, each of which, to fulfil his intention, should convey some one moral conception level to the infant capacity: but how has he gone about the working out this idea? Why, in the first place by travestying the Proverbs of Solomon, which do not admit of his measured arrangement of "single couplets." In many instances, consequently, the idea is extended through several couplets; and these are, nevertheless, separately numbered, so as to give to each the external appearance of an isolated meaning. The result is, that every now and then we find a couplet, which, when taken alone is either nonsense, or, what is worse, inculcates the direct reverse of what is intended.

Thus, by way of discountenancing force and robbery, the author has, in the tenth maxim, the following instruction to his pupil:—

> The grave shall hide the secret from our foes,
> And in the pit the crime with them repose.

Then follows the eleventh, and, to back that, the twelfth maxim:—

> Then wealth will come to recompense the toil,
> And we shall fill our houses with the spoil.
>
> Come, join the crew; come, cast away thy care,
> And thou shalt in the common treasure share.

The error in this case lies in the omission of an opening clause, "the robber cries," which belongs to the ninth maxim; while the real and fundamental thought does not come in till the thirteenth,—

> My child, these sons of darkness ever fly.

Now if the juvenile reader's notions of the matter be not more clear than those of the writer, will he not fall into the error of him who quoted the denial of a divinity unaccompanied by the preliminary of "The fool said in his heart," and thus made the Psalmist a preacher of Atheism?

Some of the maxims embody erroneous ideas; the seventeenth of the second part, for instance, runs thus:—

> Black melancholy life's clear current stains,
> And breeds all humours in the loaded veins.

Surely the child can learn nothing from this maxim, which is neither physiologically nor even Galenically true. So too, in the thirty-seventh, we find that

> To some a light intuitive is given,
> Which seems to come from secret truths in heaven:

a proposition which Sir Egerton, we suppose, has learned in Plato or in Kant. Observe also the fallacy hidden beneath "seems." Why not, at once, boldly say "which comes"? the intended inference would be the same; but it would be more honestly stated.

Again, the child is told that

> Craft is a weapon by which more is done,
> Than all that genius and that worth has won.

This, to be sure, is true enough—too true, as they say, to put in a ballad; but what is the student to understand by it?—that he should craftily protect himself? or that he should practise craft on others; setting genius and worth somewhat on one side?

Between maxims fifty-eight and fifty-nine, the sentence (though not so punctuated) is suspended; so that the latter, taken by itself, couples the verb with the wrong substantives, and becomes nonsense. In eighty-five also, Priscian's head is once more broken.

Without however a further pursuit of details, it is enough to add, that in the selection of thoughts there is not sufficient reference to the presumed age and intellectual developement of the reader. Some of the maxims contain the simplest moral elements "adapted to the meanest understandings;" others refer to matters of taste and criticism, and others even to high metaphysics.

Perhaps it may be thought that we are attaching an importance to the little volume which it does not claim, and that we are "breaking a butterfly upon a wheel." But in showing the mistakes into which such a person as Sir Egerton can fall, in his attempt to guage the infant intellect, and to provide it with the materials for its activity, we desire only to draw an *à fortiori* conclusion against the very many inferior persons who so commonly deem themselves equal to the trade of education; and to shake the too complacent self-confidence of the public on a point on which they have as yet very much to learn.

The Bivouac. By W. H. Maxwell, Author of 'Stories of Waterloo,' &c. 3 vols. Bentley.

HERE is another of that endless class of tales in which we have to fight over again the battles of Talavera and Vittoria, storm Badajoz and St. Sebastian, and do a great deal of skirmishing and guerilla work. The thread of the narrative is a sort of biography of a Colonel Connor; but the bulk of the work is episodical, accounts of the battles and sieges before mentioned, confessions of gipsies and guerillas, with anecdotes contributed by brother officers in after-dinner talk at the mess-table. As a taste of its quality, we shall give two or three of these military reminiscences.

"'The French show a marked distinction in their treatment of us and our good allies,' said O'Brien. 'It was strongly instanced this morning. While we were forcing the road, a company had scaled the rocks above it to dislodge the tirailleurs who were firing at us from the heights. A poor fellow of mine, whose complexion is uncommonly swarthy, was wounded in the leg and fell. Unfortunately two or three retreating Frenchmen passed accidentally the spot where he was lying, and mistaking him for a Portuguese sharpshooter, stabbed him in several places, and flung him over the precipice; while they raised his comrade from the ground, placed a knapsack under his head, and gave him a drink from a leathern bottle of excellent tinta, which one of them had slung across his shoulder. On coming up we found the sufferer upon the road, and with difficulty he told us how he had been treated. We of course rendered him some assistance; but Sergeant Corrigan's remarks, as he was binding a cloth round his fractured leg, turned our condolence into laughter. 'There now,' he said, as he propped the wounded man against a rock—'there you are as snug as if you were in the barracks of Kilkenny. Didn't I always

tell ye, that yalla face of yours would bring ye into trouble? No wonder the French mistook ye for a Portagee. It's yourself that could travel from Badajos to Giberralthur, and you're so like a native, the devil a dog would bark at you the whole way. If you get better, Barney dear, write for the priest's lines, that you were bred and born at Shannonbridge, and ye can paste it on the back of ye'r knapsack.'

"'An instance of French confidence occurred yesterday, after we debouched by Vera,' observed one of the lieutenants. 'I was with a section of the company in the advance of the rest, when on turning a sudden angle of the road, we perceived not twenty yards off, a wounded voltigeur extended on the ground, and a young comrade supporting him. The Frenchman never attempted to retreat, but smiled when we came up as if he had been expecting us. 'Good morning,' he said, 'I have been waiting for you, gentlemen. My poor friend's leg is broken by a shot, and I could not leave him till you arrived, lest some of these Portuguese brigands should murder him. Pierre,' he continued, as he addressed his companion—'here are the brave English, and you will be taken care of. I will leave you a flask of water, and you will soon be succoured by our noble enemy. Gentlemen, will you honour me by emptying this canteen? You will find it excellent, for I took it from a portly friar two days ago.' There was no need to repeat the invitation. I set the example, the canteen passed from mouth to mouth, and the monk's brandy vanished. The conscript—for he had not joined above a month—replenished the flask with water from a spring just by. He placed it in his comrade's hand, bade him an affectionate farewell, bowed gracefully to us, threw his musket over his shoulder, and trotted off to join his regiment, which he pointed out upon a distant height. He seemed never for a moment to contemplate the possibility of our sending him in durance to the rear; and there were about him such kindness and confidence, that on our part no one ever dreamed of detaining him.'

"'There never was, and probably never will be,' said Captain Mornington, 'so powerful an example of the influence of national confidence and courtesy, remaining unimpaired even during the continuance of a ferocious engagement, as that which Talavera exhibits. * * All morning the battle raged, and the day assault was as unsuccessful as the night attack had proved. Both armies had lain upon the ground, but none had slept—the trooper with his horse's bridle round his arm—the soldier in momentary expectation of a fresh attempt, listened in every noise for the enemy's approach. No wonder then that a sultry day in July found both sides overcome with heat and hunger—and by a sort of common consent, long before noon, hostilities ceased, and the French cooked their dinners, while the English had wine and bread served out. Then it was, that a curious scene ensued. A small stream, tributary to the Tagus, flowed through a part of the battle-ground, and separated the combatants. During the pause that the heat of the weather and the weariness of the troops produced, both armies went to the banks of the rivulet for water. The men approached each other fearlessly, threw down their caps and muskets, chatted to each other like old acquaintances, and exchanged their brandy-flasks and wine-skins. All asperity of feeling seemed forgotten. To a stranger they would appear more like an allied force, than men hot from a ferocious conflict, and only gathering strength and energy to recommence it anew. But a still nobler rivalry for the time existed—the interval was employed in carrying off the wounded, who lay interspersed upon the hard-contested field; and, to the honour of both be it told, each endeavoured to extricate the common sufferers, and remove their unfortunate friends and enemies without distinction. Suddenly—the bugles sounded—the drums beat to arms—many of the rival soldiery shook hands and parted with expressions of mutual esteem, and in ten minutes after they were again at the bayonet's point.'"

The work is written throughout with a good deal of spirit; and, though not much to our taste, we think it may be welcome to others, and prove pleasant for summer and sea-side reading.

The Spas of Germany.

[Second Notice.]

We now give, as promised, an account of the author's visit to the Salt Mines at Hallein.

"I reached the celebrated salt-mines in the neighbourhood of the small town of Hallein, after having ascended the steep and winding road of the Durrenberg. * *

"Armed with the necessary order from the inspector of the mines, I knocked for admittance at the gate of the *Manipulation-Hof*, and was received into a large square room, hung with pictures of the ancient and most renowned miners, some of whose descendants stood before me in reality, with their stern countenances,—thick-set, square-shouldered, robust-looking, and clad in the trappings of their order. * *

"A register of the visiters was presented to me, and by a mere token of the extended finger, *sans mot dire*, I received directions to inscribe my name in it. While doing this, the names of Dr. Child, of M. Burmester; and of Mr. Bunbury, (who took the trouble to designate himself, to this sturdy race, as 'of Angher Castle in Ireland')—and lastly, of the fair Mrs. Trollope, caught my attention, as having visited the mines a few days before. But I was soon recalled from my readings, by the brusque handling of one of the miners, who set about decking me in the upper garment of their calling, while a second supplied me with the nether one, and a third buckled around my waist the broad belt, within which he fixed a stout right hand glove of leather, as if to prepare me for a share in their laborious work. * *

"As I surveyed myself, on quitting the presence of the taciturn chief, to follow the guide he had assigned me,—I could not resist tempting him to break his silence by asking, whether the fair lady whose name was last inscribed on the register, and who, I explained to him, was a renowned English traveller, had also submitted to wear the garb of the miner, with the characteristic nether part of it: 'Even so,' was the reply.

"Litner, a robust-looking man, full of intelligence, and, as I afterwards found, of information also, aged fifty-four years, (twenty-four of which he had passed in the dark recesses of the Durrenberg, with the rank of an *Arbeitführer*,) was the conductor whom I followed to the low arched entrance (*Einfahrt*) of the mine, over which was the inscription, 'Ober Steinberg, 1450.' This is the name given to the fifth of the nine stages or stories into which the internal mine is divided, reckoning from the highest, or the one nearest the summit of the mountain. Having entered the dark passage of *Freudenberg*, lighted by a short candle carried by the conductor and by myself, we walked through it, in a straight line, for a distance of nearly two thousand feet, the first four hundred of which presented a wall on each side of white *Untersbergen* marble. This, like all the other passages or galleries through which I passed afterwards, called *Haupt stollen*, runs horizontally into the mountain, and meets the shafts. These galleries are generally two feet wide near the floor, with two parallel rails, on which run a kind of low-wheeled waggons, conveying the ore and mineral salt from one part of the mine to another. The rails admit also of a species of car, placed on four low wheels, in which the visiters who prefer that mode of conveyance to walking, are drawn by one or more miners with astonishing rapidity. The walls of these galleries approach each other nearer at the ceiling than at the floor, and are supported either by piles of wood or by masonry. As it was discovered that, where the wood was most exposed to the action of the salt-earth, it became harder and harder, and was scarcely ever after liable to decay, all those piles which, when fixed, are not necessarily in contact with the salt parts of the mountain, are previously soaked in brine. Now here is a hint for a rival company to Kyan's monopoly, which I am convinced offers no greater security against the decay of wood than strong brine would. It will be found on trial that the *bichloride of sodium* in this respect is as efficacious as the *bichloride of mercury* employed by Kyan.

"How ventilation is carried on in these passages, it is not easy to discover. The entrance of the external air is carefully prevented, by several doors called weather-doors; and so effectually is this managed, that in no part of the mine, (which extends nearly four miles, taking all the galleries, shafts, and recesses together,) whether I was walking, or riding on the car, did the flame of my candle flicker in the smallest degree. That there is, at times, a want of air, is evident from the fact, that an arrangement exists in some parts for supplying it to the miners, when at work, by means of bellows. * *

"We descended about two hundred steps cut in the rock, at the termination of this first passage, in order to reach another and lower portion of it, which brought us to the brink of what appeared to me a bottomless pit. The 'darkness visible' of the place at first hardly permitted a more careful survey; but when the eye became, at last, accustomed to the dingy atmosphere, I could perceive before me a narrow inclined plane, at an angle of forty degrees, the *terminus* of which was left entirely to imagination to divine. On the inclined plane, and in the direction of its axis, two parallel lines, one foot apart, formed of smooth, polished, wooden cylinders, (being portions of the trunks of fir trees,) six inches in diameter, placed contiguous to one another, are laid down, and secured by short cross pieces. A tightly-drawn rope runs close to and parallel with the cylinder on the right.

"Litner here looked round for the first time since we had entered these singular regions; and pulling from my girdle the glove, bid me put it on my right hand, and follow his example. He grinned at the same time a smile of encouragement, probably because he saw on my pale face the momentary feeling of my heart. Litner next stretched himself upon the inclined plane, keeping his head somewhat erect, and touching with his body both wooden cylinders, across which his legs were thrown slanting. He held his light with the left, while within the palm of the right hand he grasped the tight rope, keeping the thumb free and aloof from it. * *

"I stooped on the brink of the dark abyss, behind my guide, seated myself on the cylinders, and placed my feet against Litner's broad shoulders, while, with my hand passed under the rope, I strove to gain some security by holding it tight. The moment Litner felt the weight of my person inclining against him, he suffered himself to slide downwards, followed by me; and down, down we glided at a giddy pace, my breathing held in suspense, so that the dead silence of the dark cavern into which we were thus plunging resounded only with the wind-like hissing of the rope, as it passed rapidly over the rough glove on our hands, and with the distant murmuring and splashing of unseen and falling water. In one minute and a half, we were again on our feet at the end of this shaft, called Freudenberge Rolle, three hundred and fifty feet deep.

"We had now reached the fourth story of the mine, called the *Unter-steinberg*, where a passage, six hundred and fifty feet in length, leads to a second shaft, very appropriately called *Jacob's Ladder*, one hundred and eighty-nine feet deep, and placed at forty-six degrees of inclination. On the right and left of this passage, the miners were seen, busy at their toilsome task, in parties of four, working with the regularity of soldiers. It is in the passage at the termination of this steep descent, that we find the most productive salt works. * *

"Two other shafts at an angle of forty-three degrees, the *Königs Rolle*, and the *Konhauser Rolle*, are descended in the like manner, in order to view the *Rupert's Berg*, or the lowest stage but one of the mine. Here the visiter is shown a spacious place like a room, cut out of the rock, called the 'Commissioner's Chamber,' containing the Austrian arms, and the monument of St. Rupert. In a niche scooped out of the rock, specimens of the different strata which occur in the mine are exhibited, together with some Roman antiquities found here in 1825, the date of which has been determined by the royal warder of the Salines, who is a great antiquarian, to be one hundred and eighty years before Christ.

"Hitherto fear had given way to admiration, and fatigue to the pleasure of witnessing these stupendous works of nature and man. But the greatest surprise was yet to come, and great it was indeed, when upon the throwing open of a door which seemed to bar the avenue we were then pursuing, I suddenly emerged

from comparative darkness and a narrow pass, into a wide expanse, lighted up all round by hundreds of tapers. These, being reflected from the surface of a dark and still lake of liquid brine, which spreads widely below them, and from the low and extended ceiling above, which was sparkling with the deliquescent moisture of the salt rock, seemed at first to be of ten times their real number. The sudden appearance, too, of several of the miners in their bizarre costume, whispering in low murmurs to each other; some on the brink of this dismal lake, looking on; while others were pushing a flat bark on its liquid surface to the spot on which I stood, inviting me at the same time, and by mute signs only, to embark on it, added to my first surprise the more intense feeling of interest. At the first glance, one might have fancied himself in a very large square at night surrounded by an illuminated town; and the veins of salt rock, which were of red, green, yellow, white, and blue tints, mixed with crystals of selenite, sparkled and shone like precious stones. * *

"The only way out of this dreary abode, however, was by crossing the lake. This Litner made me understand, when he found that I hesitated to place my foot on the bark. He then set me the example:

Lo duca mio discese nella barca,
E poi mi fec'entrar appresso lui.

And the frail bark conveyed us across, where, being landed, we proceeded to the almost perpendicular *Rolle*, two hundred and fifty feet deep, which led to the lowest division of the mine, called the Wolfdietrick's Berg. This region is one thousand three hundred and twenty feet deep, in a perpendicular line, from the spot on which stands the little church I had visited, near the entrance into the mines.

"The length of the gallery of this étage of the mine, the lowest of all, is eight thousand and forty feet, one-third of which is cut through grey limestone. It leads to the gate of egress, (*Ausfahrt*,) towards which I thought we should now walk, without any further interruption. Our progress, however, was suddenly checked, when at about seven thousand feet from the *Ultima Thule*, by a door which barred the passage. This, at the clap of Litner's hands, was mysteriously opened, when two gigantic miners appeared, one placed at each end of a car or bench, such as I have already described, called a *Burgwurst*, suspended by ropes over a sledge, the grooves of which were locked over the rails on the floor of the gallery. On this vehicle Litner and myself placed ourselves astride one behind the other; when, at a signal, the door behind closed upon us with a deafening noise and prolonged reverberations; and away went the machine, drawn by the miner in front and impelled by the one behind, with such rapidity, that we accomplished the whole distance in *ten* minutes.

"Our candles just before this time had begun to verge fast to their last and expiring scintillæ, and finally went out,—leaving us in total darkness, scudding at a fearful rate through a straight and narrow passage which echoed the tramping of the two running miners. This *coup de théâtre* was purposely brought about by calculating the duration of the candles, in order that we might enjoy another and a concluding sight. When distant about two thousand five hundred feet from the egress gate, Litner bid the conductor to stop, and called to me to look over his shoulders and straight forward. I did so, and at a distance, of the length of which I could form no idea, I perceived a minute twinkling star in the middle of the passage. I kept my eyes steadily upon it; the sledge once more advanced with increased velocity, and the star also increased in size; when about twelve hundred feet distant it looked like the rising moon, as round and as bright; until at length it changed into the full glare of the brightest sun. The passage, which is just wide enough to admit of the species of car I have described, felt cold and damp from the deliquescent salt by which we were encompassed, as well as from the brisk fanning of the air through which we darted with so much rapidity. When, at length, our car, by a last effort, was ejected some distance out of the bowels of the mountain into the external atmosphere, the sudden impression of light and warmth was quite delightful.

"I found, in a small house at the *Ausfahrt*, the clothes I had left at the entrance on the other side of the mountain, and there deposited the miner's garb,—giving a gratification of three florins and a half to the conductor, for himself and his brethren, and receiving from him in return a small box containing specimens of all the varieties of coloured salt rock."

OUR LIBRARY TABLE.

Country Stories, by Mary Russell Mitford.—This may be received as a supplementary volume either to 'Our Village' or 'Belford Regis,' according to the purchaser's pleasure. Like its predecessors, it is full of kind healthy feeling and fine observation of nature, with occasional touches of quaint and delicate humour. No one understands the oddities of country neighbourhoods and country towns more thoroughly than Miss Mitford: and she paints with a good-humour as well as a fidelity that makes us like even while we laugh at them. The work before us is chiefly made up of fugitive stories and sketches previously published, so that we cannot indulge ourselves in extract.

Impressions of Italy, and other Poems, by the Lady E. Stuart Wortley.—*Hours at Naples, and other Poems*, the Same.—It would be considered ungenerous, we suppose, if we were to count up the number of volumes of poetry published by Lady E. S. Wortley within the last two or three years; the inference would be but too manifest. Enough, then, that we announce two more,—principally devoted to impressions made on the writer by foreign travel. Like their predecessors, they are marked with occasional loftiness of thought,—an affluence of imagery and of words, which, however, for want of intellectual discipline, too often degerates into true no-meaning,—a like feeling for the music of versification, but so imperfectly cultivated, that rhythm and *refrain* are not unfrequently allowed to run quite wild—(see 'The Farewell to the Mediterranean,') and a perverse ambition to set forth the writer, if not as "most musical," assuredly as "most melancholy,"—a wretched, heart-broken, desolate creature—one,

——whom ruthless Fate
Hath bound to earth with sorrow.

Here, for instance, is an invocation to Memory, by a young and beautiful and accomplished lady, an English Duke's daughter, married to the son of an English Earl, and surrounded by every luxury that earth has to offer:—

Days of my fair and fairy Childhood, fill
With rapturous reminiscences my soul—
Days, when my Heart was not a living Coal,
My Brain was not a razed and withered Scroll,
My Life was not a tempest—and a toil,
My Thought was not a wrung and ravelled coil,
My Soul was not a sun-scorched wilderness—
My Being not a burthen of Distress.

We, however, are in no humour to be severe; yet it is provoking to see powers so wasted, and talent so sported with. We have spoken of the affluence of imagery, and the instinctive feeling for versification, which distinguish this lady's poetry: and here are a dozen lines that may serve as a specimen; let the reader test them by common sense, and see if our censure be not equally justified.

Naples—Naples!—richest ditty—
Pæan-song—divinest City;
Swan-like Harmony sublime,
Rising o'er the tide of time;
Murmurings of melodious shell,
With a long, eolian swell;
Lark-like hymn, and echoing strain—
Praising thine enchanted reign;—
Might not serve to show forth all
Thy countless splendours magical.

In proof that it is worth while to bestow a few words of remonstrance on this lady, we shall quote the following passage, full of feeling and music:—

My child!—my child!—I am not near thee now
To part the hair that clusters o'er thy brow,
And plant ten thousand kisses there—to view
Thy faëry joys, and ah! to share them too;
To watch thy golden slumbers when thou'rt laid
In Innocency's vesture pure arrayed,
Like a tired bird within its warm sweet nest,
And all thy raptures are composed to rest!
* * *
My child!—the music of thy laughter now
I dream of—but I hear not—o'er thy brow
Wander ten thousand meanings new and sweet,
I may not see them—may not guide thy feet
To spots of pleasantness, now that the Spring
That calls to life each bright and blooming thing
Is bursting over England's golden fields,
Till every bank a wealth of blossoms yields
For Childhood's dimpled hands!—'tis glorious here
In this warm azure Italy—most clear,
Most exquisite the pure and perfumed air,
The sky unshadowed, and the sunshine fair;
And fair the almond-blossoms clustered close
Upon the loaded bough—while many a rose
Trails its resplendent wonder, richly bowed
Beneath its beauty as beneath a cloud
Along the trellised walk or fountain side,
A dazzling trophy—Nature's loveliest pride.
But oh! my child, my child! I fain would be
Now wandering 'midst our English haunts with thee,
Amongst those cowslip-scattered fields so bright,
They flash one glistening lake of living light,
One deep and shining galaxy of gold,
A glory and a luxury to behold,
While their massed sunshine-hoards wave to and fro,
Beneath the softest breezes that may blow!

We sincerely wish that the writer would take our censure in good part, as it is intended, and do her best to produce some one perfect work of art, and not waste a life in scattering about fragments.

The Pirate of the Gulf, or Lafitte, by the author of 'The South-West,' 2 vols.—This is a reprint of an American novel. The story is founded on historical data, and is replete with that sort of interest which can be drawn from a portraiture of humanity when released from the laws of ordinary society, and left to the workings of its own ungoverned passions. In saying this, we, of course, divest the work of all claim to the merit of originality. Pirates and buccaneers are no new personages in fictitious writing; and the hero of the tale is little different from Lord Byron's Corsair cut down to the standard of prose. Whether these creatures of impulse, generous and kindly in the abstract, but cool and dauntless villains whenever their personal interests are crossed and thwarted, have sufficient warrantry in nature, or whether their adventures, as they are usually treated, are morally serviceable in the narration, it little boots to inquire: they have obtained a place and a sanction from high names, and have become a lawful property to the romancers. Admitting then the author's right and title to the theme, we must also allow that he has turned it to good purpose, and produced a work of quick and varied incident, tolerably well told, and not violating probability more than is permitted on such occasions. In describing the enchanting scenery, too, in which he has placed his *dramatis personæ* he has shown considerable power; and they who delight in the whizz of pistol shots and the glittering of cutlasses and such "moving accidents by flood and field," will not be sorry to add the present volumes to their stores of excitement. For ourselves, however, we must in conscience whisper in the author's ear that we have had enough of them, and that when next we encounter him we shall be pleased if it be in another and a better department of his delightful art.

Flowers and Trees.—After having ourselves expatiated on the profitable pleasure of country rambles, such books as afford the rambler the means of enjoying the fresh air and the green fields with something higher than mere animal pleasure, have a right to claim a kind word from us. Here then are five woodland companions,—*The Moral of Flowers, Third Edition*; a goodly octavo, in which the associations attached to flowers by our simple and poetical ancestors, and the peculiarities of natural habit and position are *improved* in pleasing prose and verse, with many faithful coloured illustrations. Here, too, is the second edition of Miss Waring's *Wild Garland*, a much humbler tome in size, but, of the two, fresher and livelier in its letter-press, and containing verses worth the praise they received in the pages of *Blackwood* some five years ago. And here, as a stately companion to 'The Moral of Flowers,' comes *The Spirit of the Woods*, by the same author—also luxuriously printed and beautifully illustrated; although we are not quite satisfied with the colouring of the specimens. Besides agreeable original verses, the letter-press contains much pleasant talk gleaned from Evelyn and Gilpin:—more, however, might have been collected; and, had we space and opportunity, we could prove it, without turning to other pages than those of memory; for to us, fine trees have always been the crowning charm of a landscape. Let us give a specimen, however, of the work, and this shall be the poem belonging to the aspen, the leaves of which tree, according to tradition, have always thrilled and quivered since the days when the Cross was made of its wood.

Daylight is closing, but the west
Still with the pomp of sunset glows,
And crimson cloud on mountain's breast,
And tower, and spire, its radiance throws,
While one by one in eastern skies
"The stars which usher evening rise."

How deep, how holy is the calm!
Each sound seems hush'd by magic spell,
As if sweet Peace her honied balm
Blent with each dewdrop as it fell.
Would that the cares which man pursue
A pause like this of nature knew!
Yet in this deep tranquillity,
When e'en the thistle's down is still,
Trembles yon towering aspen tree,
Like one whose bygone deeds of ill,
At hush of night, before him sweep,
To scare his dreams and "murder sleep."
Far off in Highland wilds 'tis said,
(But truth now laughs at fancy's lore)
That of this tree the cross was made
Which erst the Lord of Glory bore,
And of that deed its leaves confess
Ever since a troubled consciousness.
We boast of clearer light; but say,
Hath Science, in her lofty pride,
For every legend swept away
Some better, holier truth supplied?
What hath she to the wanderer given
To help him on his road to heaven?
Say, who hath gazed upon this tree
With that strange legend in his mind,
But inward turn'd his eye to see
Unanswering feeling he could find,—
A trembling for that guilt which gave
His Saviour to the cross and grave?
And who such glance did inward bend,
But scorn'd the apathy and pride
Which make him slight that more than friend,
For him who bled, for him who died;
Nor pray'd his callous heart might prove
What 'tis to tremble, weep, and love?

From this beautiful book we turn to a little manual of less pretension, *Woodland Gleanings*, by the editor of 'The Sentiment of Flowers,' illustrated not merely with a few twigs and acorns of the oak, a handful of hawthorn blossoms, &c., after the mode of its more sumptuous predecessor, but also with sketches of the entire trees, which we should have much preferred to the piece-meal fashion of exhibiting form and foliage had they been more characteristically executed. In portraits of the oak and the cedar and the larch, a pencil can hardly blunder, but in some of the less strikingly distinguished trees, such as the beech, the linden, and the alder, the artist here employed has been either timid or inexperienced in the forest anatomy of trunks and boughs, on which the effect of foliage depends even more than on the peculiar form and colour of the leaf. The letter-press of these 'Woodland Gleanings' is unaffected and pleasant; owing much, perhaps *too* much, of its pleasantries to Evelyn and Gilpin and others.—In addition here is a *Familiar Description of Trees, &c. for children, in a Series of Letters from a Mother to her Son.* The author of this little work has resolved "not to breed contempt" by her *familiarity*. Her pages are full of mythology and hard words—she prefaces her lesson about the pine tree, with a letter concerning the Fates and the Furies. Such a work is no woodland companion for *our* little folk.

Reid's Science of Botany is a small unpretending abridgment of the most material facts and opinions connected with that science. It is executed in imitation, as it would seem, of Professor Lindley's outline, but is more explanatory. The woodcuts with which it is illustrated are rude, but answer the purpose, and in all respects the work may be said to be far superior to the generality of such abridgments.

Notes Abroad and Rhapsodies at Home, by a Veteran Traveller.—The name of Rae Wilson has become a jest and a bye-word in literature; yet, as we foretold (See *Athenæum*, No. 412), the man must go on, scribbling, canting, and publishing;—for such is his insane passion for notoriety that he would rather write libels, and stand the pelting of the pillory, than remain the obscure blockhead for which Nature designed him. His best hopes, indeed, seem now to rest on his libels; in the volumes before us he runs a-muck at every one whose name he could drag into his pages—and of course is awful in his denunciations of the critics, who seem, with rare unanimity, to have expressed their contempt for him. The *Athenæum* is specially favoured; and, if he is to be believed, he knows more of its contributors than we do. Assuredly he is a careful and critical reader of this journal, and expresses himself delighted with a certain article by "some one cleverer than usual of its writers." Now if the man had one particle of judgment he must have discovered that the article referred to, whether good, bad, or indifferent, was written by one whose hand is familiar to the readers of the Athenæum—*the reviewer of Rae Wilson's former work!* But enough—we have heretofore expressed our opinion of him, and it were cruel to repeat and enforce it. Others, however, are of a different opinion, and next week we shall publish—An Ode to Rae Wilson, by Thomas Hood.

List of New Books.—Baylee on the Institutions of the Church of England, 2nd edit. 12mo. 2s. 6d. cl.—A Legend of the Puritans, and other Poems, by S. Fisher, 12mo. 5s. cl.—Difficulties of Dissent, by Rev. R. Hobart, 12mo. 1s. swd.—Guizot's Lectures on European Civilization, translated by Mrs. Colonel Beckwith, cr. 8vo. 10s. 6d. bds.—The Presbyterian Review, 8vo. 4s. swd.—London as it is, by John Hogg, 12mo. 9s. cl.—The Basque Provinces, by E. B. Stephens, 2 vols. post 8vo. 21s. cl.—Dodsley's Annual Register, Vol. LXXVIII., 1836, 8vo. 16s. bds.—Smith's Scripture Testimony to the Messiah, 3rd edit. enlarged, 3 vols. 8vo. 36s. bds.—Keith's Signs of the Times, new edit. 2 vols. 12mo. 10s. 6d. bds.—Fletcher's (Rev. W.) Young Astronomer, 12mo. 4s. cl.—Lardner's Cabinet Cyclopædia, Vol. XCIII., (Literary and Scientific Men, Vol. II.), 6s. cl.—Lessons on Form (Geometry), by Charles Reiner, 12mo. 6s. cl.—Remarks on Dr. Wiseman's Lectures on the Rule of Faith, reprinted from the British Magazine, 12mo. 4s. bds.—The Golden Pot of Manna, by J. Burns, Vol. I. 12mo. 3s. 6d. cl.—Fuller's Memoirs of the Rev. Samuel Pearce, new edit. 12mo. 4s. cl.—Lang's History of New South Wales, 2nd edit. 2 vols. 12mo. 21s. bds.—Newman's Parochial Sermons, Vol. III., 2nd edit. 8vo. 10s. 6d. bds.—Enfield's History of Philosophy, new edit. 8vo. 16s. cl.—Macauley's Medical Dictionary, 5th edit. 8vo. 14s. bds.—Essay on Locke's System of Classical Instruction, 2nd edit. 12mo. 2s. 6d. cl.—The Hussar, 2nd edit. 2 vols. post 8vo. 21s.—Whately's Difficulties of St. Paul, 4th edit. 8vo. 10s. bds.—Whately's Romish Errors, 2nd edit. 8vo. 10s. bds.—Blomfield's Family Prayers, new edit. 2s. bds.—Fisher on the Wills Act, 12mo. 2s. 6d. bds.—White's Tithe Amendment Act, 12mo. 1s. swd.—Moses Roper's Escape from Slavery, 2s. bds.

METEOROLOGICAL JOURNAL FOR JULY.

KEPT BY THE ASSISTANT SECRETARY AT THE APARTMENTS OF

THE ROYAL SOCIETY, BY ORDER OF THE PRESIDENT AND COUNCIL.

1837. July.	9 o'clock, A.M. Barometer uncorrected. Flint Glass.	Crown Glass.	Att. Ther.	3 o'clock, P.M. Barometer uncorrected. Flint Glass.	Crown Glass.	Att. Ther.	Dew Point at 9 A.M., deg. Fahr.	Diff. of Wet and Dry Bulb Thermometer.	External Thermometers. Fahrenheit. 9 A.M.	3 P.M.	Self-registering. Lowest	Highest	Rain in inches. Fall in 24 hours at 9 A.M.	Direction of the Wind at 9 A.M.	REMARKS.
S 1	30.336	30.328	62.8	30.316	30.312	63.3	50	06.7	56.7	62.3	50.0	75.3		E	A.M. Cloudy—light brisk wind. P.M. Fine—light clouds and wind. Evening, Fine and clear.
●☉ 2	30.332	30.326	65.2	30.240	30.236	63.5	52	07.1	58.0	69.7	47.5	65.2		ENE	Fine—light clouds and haze throughout the day. Evening, Cloudy.
M 3	30.240	30.234	69.7	30.156	30.150	66.6	56	08.6	65.3	70.5	57.0	72.7		E	Fine—nearly cloudless—lt. haze throughout the day. Evening, Cldy.
T 4	30.142	30.136	65.3	30.128	30.122	67.0	58	07.2	64.6	70.4	55.7	75.0		NE	A.M. Cloudy—light breeze. P.M. Fine—light clouds. Evening, Cloudy.
W 5	30.180	30.172	66.7	30.128	30.120	66.9	53	09.8	63.4	69.8	55.3	71.5		SSE	A.M. Cloudy—light breeze. P.M. Overcast. Evening, Light rain.
T 6	30.150	30.144	67.8	30.136	30.130	68.3	60	08.7	65.6	70.3	60.6	72.3	.033	ESE	Overcast throughout the day.
F 7	30.252	30.248	64.2	30.240	30.234	67.2	57	04.3	59.5	68.7	55.6	72.5		NE	A.M. Overcast—light wind. P.M. Fine—light clouds. Evening, Fine and clear.
S 8	30.196	30.192	67.3	30.144	30.136	68.8	60	08.0	67.3	75.4	57.7	70.0		SW	Fine—nearly cloudless throughout the day. Evening, Overcast.
☉ 9	30.164	30.156	66.0	30.154	30.150	65.8	50	07.2	57.9	60.7	51.6	76.4		E	A.M. Fine—light clouds—light brisk wind. P.M. Cloudy—light wind. Evening, Fine and clear.
M10	29.970	29.964	65.7	29.926	29.920	64.9	54	06.9	61.4	69.8	50.0	63.9		E	A.M. Fine—light clouds and wind. P.M. Fine—nearly cloudless. Evening, Fine and clear.
T11	29.992	29.986	65.2	29.958	29.950	65.7	56	05.9	61.5	67.8	52.0	70.0		E	Fine—nearly cloudless—lt. breeze throughout the day. Ev. Cloudy.
W12	29.958	29.950	61.7	29.916	29.908	63.6	54	04.3	57.7	63.5	54.8	70.2		E	Overcast—light wind throughout the day.
T13	29.818	29.812	62.5	29.804	29.796	63.9	56	05.9	62.5	65.8	56.9	64.2		S	Overcast—light breeze throughout the day.
F14	29.776	29.770	64.6	29.786	29.782	66.6	57	04.7	63.8	71.3	58.7	69.5		S	A.M. Overcast—brisk wind. P.M. Cloudy. 2½ P.M. Heavy shower. Evening, Overcast—occasional showers. 7 P.M. Rainbow visible.
S 15	29.894	29.888	66.9	29.868	29.860	67.0	61	05.0	65.4	62.5	59.3	72.2	.250	S var.	A.M. Fine—dark threatening clouds—light wind. P.M. Overcast—heavy rain. Evening, Fine and clear.
☉16	29.994	29.990	68.2	29.992	29.984	66.8	59	07.8	64.8	65.6	54.7	73.2	.355	SSW	A.M. Cloudy—light rain and wind. P.M. Overcast—light rain—distant thunder. Evening, Fine and clear.
☽M17	30.044	30.040	69.8	29.994	29.990	67.5	58	08.3	64.5	68.5	53.5	72.2	.041	SW	A.M. Fine—lt. clouds & breeze. P.M. Cloudy. Ev. Ovct.—lt. rain.
T18	29.866	29.860	65.2	29.828	29.820	67.2	60	05.8	64.3	69.5	58.7	70.8	.158	SW	A.M. Cloudy—light rain and wind. P.M. Cloudy—light breeze. Evening, Very light rain.
W19	29.852	29.846	67.2	29.804	29.798	68.2	59	07.2	65.4	71.3	59.2	71.4		SSW	A.M. Cloudy—lt. wind. P.M. Fine—lt. clds. Ev. Overcast—lt. rain.
T20	29.900	29.896	68.0	29.922	29.916	67.8	60	07.8	64.8	63.3	58.0	72.0	.047	W	A.M. Cloudy—light breeze. P.M. Overcast—light rain. Evening, Continued rain.
F 21	30.050	30.044	70.8	30.034	30.028	67.3	57	07.3	63.4	68.3	55.8	67.3	.102	WNW	Fine—light clouds and wind throughout the day. Evening, Cloudy—very light rain.
S 22	30.088	30.082	66.0	30.058	30.052	67.3	57	06.2	63.3	71.7	56.5	69.8		NW	Fine—light clouds & breeze throughout the day. Ev. Fine & clear.
☉23	30.058	30.052	68.7	30.000	29.996	70.0	62	06.9	68.4	76.5	59.9	72.2		SSW	A.M. Fine—lt. clouds. P.M. Cloudy. Ev. Overcast—very light rain.
M24	30.146	30.142	74.2	30.126	30.120	71.4	57	07.7	63.7	71.2	59.0	78.3		NE	A.M. Fine—dark clouds—light breeze. P.M. Fine—light clouds. Evening, Cloudy.
T25	30.126	30.120	71.0	30.108	30.102	71.0	60	08.8	67.0	72.3	61.3	72.3		W	Fine—light clouds & breeze throughout the day. Evening, Cloudy.
W26	30.096	30.090	70.3	30.084	30.078	71.3	62	08.0	69.3	74.3	64.2	73.7		S	A.M. Fine—nearly cloudless. P.M. Cloudy. Evening, Fine & clear.
T27	30.018	30.012	73.3	29.904	29.898	72.9	61	09.2	70.6	77.4	60.3	78.5		SSW	A.M. Fine—lt. clouds. P.M. Fine—nearly cloudless—stiff breeze. Evening, Cloudy. [light rain & wind.
F 28	29.818	29.812	71.4	29.796	29.790	72.5	63	07.4	68.5	73.6	62.3	79.6		SW	A.M. Fine—lt. clds. & breeze. P.M. Cloudy—lt. rain. Ev. Overcast—
S 29	29.350	29.344	67.2	29.288	29.278	69.9	60	04.4	64.3	66.4	60.2	74.2	.255	SE var.	A.M. Ovt.—lt. rain, very h. wind. Sudden fall in Bar. 11 A.M. Heavy shr. P.M. Ovt.—occasional shrs. Ev. Ovt.—lt. rain—cont. h. wind.
☉30	29.544	29.540	65.6	29.640	29.636	67.7	58	06.3	61.7	66.8	57.0	68.7	.091	SW	A.M. Overcast—wind abated, although very high during night. P.M. Cloudy. Ev. Overcast—occasional showers, with lightning.
M31	29.924	29.922	69.6	29.890	29.886	67.4	56	07.2	62.8	68.6	53.7	68.3	.102	SW	A.M. Fine—lt. clouds. P.M. Cloudy, with occasional rain. Ev. Cldy.
MEAN..	30.009	30.003	67.4	29.980	29.973	67.6	57.5	06.9	63.8	69.2	56.7	71.7	Sum. 1.434		Mean Barometer corrected ..... 9 A.M. / 3 P.M. F. 29.909 .. 29.879 C. 29.902 .. 29.871

OUR WEEKLY GOSSIP ON LITERATURE AND ART.

It would be easy to gossip about the elections to the extent of an *Athenæum*, but as regards "literature and art," always stagnant at this time of the year, our task will be much more compendiously executed. The periodicals of the month are poorer in promises and announcements even than their usual dog-day poverty. A novel or two "just ready," after having been advertised some twelve months, being the sum of their rumours. In themselves, too, there is not much variety,—little change since when "we last inquired." The *New Monthly* and *Bentley's Miscellany* are still mainly devoted to fun and frolic, in the former the Gurney papers, in the latter 'Oliver Twist,' by Boz, continuing to bear the bell. The *New Monthly*, too, contains some sensible remarks on the position of authors in society, from the prolific pen of Captain Marryat; who will tell us, perhaps, on his return from America, how they manage the matter on the other side of the water. *Blackwood* gives us positively the last chapter of the "late Physician's" Diary, and a pungent quiz upon our friends—the natural historians; there is also a graver article on the prisons and penitentiaries of France, full of interest. *Tait* opens with a searching review of Lockhart's Scott, and contains, among other clever things, an interesting letter from Paris concerning the Pantheon. Mr. Hunt is in high good-humour with his new number of the *Monthly Repository*, and well he may, seeing that he has added Mr. Landor and Mr. Carlyle to his list of contributors. The *Metropolitan*, too, has recently undergone a change of editorship, but no change of style.

We have received the Report of the Committee of the Association for the Promotion of the Fine Arts in Scotland, and rejoice to find that the Society goes on increasing in prosperity and usefulness. In the first year the subscriptions amounted to 700*l.*, last year to 1,300*l.*, and this year to 2,100*l.*, including contributions from sixty-two different places, and among them Naples, St. Petersburgh, New York, and even New South Wales! We cannot but believe that the Society for the Encouragement of British Art will ultimately meet with great success. The great difficulty is to make it known; it is comparatively lost in London; our best hopes indeed rest on the country. In a provincial city one active and intelligent gentleman could do more than a hundred pounds expended in advertisements, and surely Bath, Bristol, Exeter, Plymouth, Portsmouth, Southampton, Salisbury, Winchester, Chichester, to take only one small district, surely all of these cities together will equal New South Wales in their patronage of art.

To these literary and artistic *nothings* a musical *something* may be added, which is, a well-authenticated rumour that Rossini is actually at work upon a new French opera; Meyerbeer, too, has a *libretto* in his hands for the Académie Royale, where Duprey is singing with such success, that the French periodicals are calling aloud for artists of a higher order to support him worthily; and Madame Stroltz is to make her *début* some time in the winter. We hear, too, the greatest of great things concerning Mdlle. Francilla Pixis, who is working marvels at Milan.

BRITISH INSTITUTION, PALL MALL.

The Gallery with a SELECTION of PICTURES by ANCIENT MASTERS of the Italian, Flemish, Dutch, and French Schools, is OPEN DAILY, from Ten in the Morning until Six in the Evening.—Admittance, 1*s.*; Catalogue, 1*s.*

WILLIAM BARNARD, Keeper.

DIORAMA, REGENT'S PARK.

NOW OPEN.—NEW EXHIBITION, representing the Interior of the BASILICA OF ST. PAUL NEAR ROME, BEFORE AND AFTER ITS DESTRUCTION BY FIRE; and the VILLAGE OF ALAGNA, IN PIEDMONT, DESTROYED BY AN AVALANCHE. Both Pictures are painted by Le Chevalier Bouton. Open Daily from Ten till Five.

FINE ARTS

NEW PUBLICATIONS.

Here is the second number of a gigantic foreign work the *Dresden Gallery*, lithographed by Franz Hanfstaengl, comprising Correggio's 'Saint Sebastian,' Metzu's 'Poulterer,' Ruysdael's grand landscape 'The Hunt,' and a group of Boors carousing, by Ostade. The work is splendid in scale, but the lithographs are, to our thinking, something over-finished; and the consequence is, a certain smeared blackness of tone, which detracts, in a degree, from their general effect. But it is a fine work, and deserves encouragement. With this another very interesting foreign work may be mentioned—M. Sansonetti's *Outlines of the Tapestry which formed the interior of the tent of Charles the Bold, Duke of Burgundy, at the siege of Nancy, with illustrative letter-press by M. Achille Jubinal.* To the antiquarian, no less than the historian, these will be a most welcome present, while the amateur will find glimpses, as in some of the ancient painted windows, of design and expression which will surprise as much as they will gratify him.

Flora's Gems, or the Treasures of the Parterre. Twelve bouquets drawn and coloured from nature, by James Andrews,—with *Poetical Illustrations*, by Louisa Anne Twamley—is a very splendid book, only inferior to a series of exquisitely finished drawings of the richest garden flowers. We need but refer to the groups of dahlias and china-asters, and to that containing the passion flower and tulip (but when were these spring and summer flowers found blossoming in company?)—or, in short, to any of the twelve, to prove our assertion. With regard to the manner in which Miss Twamley has fulfilled her part of the undertaking, it is not impossible, but we may, on a leisure day, steal a verse or two, to inform our readers.

Heath's *Shakespeare Gallery* has reached its twelfth number. Many of the subjects have been contributed by Mr. Meadows; he is happier in his Mrs. Ford and Mrs. Page, than in Cassandra, or, we should perhaps say, generally, in the ripe, sparkling, but not very refined, style of beauty which befits the Merry Wives of Windsor—had we not his Virgilia to prove to us that he is capable of conceptions also of a higher and more spiritual order. Mr. Herbert's Queen Katharine is at once girlish and frigid;—Mr. Bostock's Celia, too much "sicklied o'er with the pale cast of thought" for the playmate and bosom friend of the airy, fascinating Rosalind. Mr. Jenkins's Hero wears the air of a modern drawing-room. We must be forgiven if we are hard to please when Shakespeare is concerned. Does it never occur to our artists and amateurs that his men, as well as his women, are worthy of their pains and patronage?

The first number of Saunders's *Portraits and Memoirs of the most Eminent Living Political Reformers* is before us: containing, as subjects, Lord John Russell, (from a bust by Hollings,) engraved by Holl; Mr. Charles Buller, from a painting by Duppa, engraved by Scriven; and Mr. Roebuck, engraved by H. Robinson, after Watts. The execution of these, as a whole, is satisfactory; and the work may fairly take its stand opposite to the Conservative portraits.

The first number of the new *Don Quixote* is before us—we mean the French edition, illustrated by Tony Johannot, which is to rank beside the Gil Blas and the Molière. There is force and spirit in the designs, but their execution seems to us hardly equal to that of their predecessors.

Fourteen Lithographic Views of Knaresborough, sketched from Nature, and drawn on Stone, by Samuel Howell, present us with a series of striking subjects, including rock and ruin, executed in a bold style: in some the drawings are a little too coarse. They are accompanied by illustrative letter-press, in prose and verse, by Mr. J. Doran.

To close this long and miscellaneous list, with a notice of works in progress, we must speak of the first quarterly part of Dr. Beattie's new work, *The Waldenses*, (the views taken by Mr. Bartlett and Mr. Brockedon) in which, as in former works by the same editor, will be found many picturesque scenes, carefully engraved, and pleasantly described; and we may report as favourably of Mr. Roscoe's *Wanderings and Excursions in South Wales*, which has reached its third part—the illustrations, being supplied by Cox, Harding, and Copley Fielding, stand higher in the scale of artistic merit than most of their contemporaries. Here, too, we have the first number of a foreign work, *Picturesque and Romantic Germany*, which is to be divided into ten sections, the illustration of each to be confided to a writer of celebrity. This work promises well; the specimen plate, we see, is engraved by an English *burin*; there should be an English edition, with the text translated, to ensure its popularity among us. The portraits in the fourth number of *Ryall's Conservative Statesmen* are, the Marquis of Londonderry, Sir Charles Wetherell, and Mr. Emerson Tennant—their execution fully maintains the character of the work. Mr. Shaw's *Details of Elizabethan Architecture*, and *Encyclopedia of Ornament*, (the first at its seventh, the second at its eighth number) merit the praise awarded to their earlier numbers.

MUSIC AND THE DRAMA

Haymarket.—A drama, in two acts, called 'The Young King, was successful here on Saturday last. Without being possessed of any great novelty either of plot or character, it is yet an agreeable production, the old materials being strung together in something of a new form by some hand evidently experienced in its craft, and the dialogue being easy, and for the most part, above average. We cannot, however, too soon or too strongly reprehend the introduction of some indecent expressions into the speeches assigned to Mrs. Glover and Mrs. Nisbett, and which were uttered, of course unconsciously, by those ladies. The boisterous and vulgar laugh with which they were received by the free-thinking and free-coming part of the audience, has not, we trust, been mistaken for the sanction of the public. Be it wilfulness or carelessness which makes or suffers an author to write such things, it is the duty of the management to prevent their being spoken; it is more especially the duty of *this* management, after the highly objectionable tone of two out of the three novelties hitherto produced. With the opinion we have deliberately formed and expressed of that repulsive play 'The Bridal,' which was the first piece on this occasion, it was neither a matter of surprise nor disappointment to us to see a bad house at first price. On its production it was as clear that it would not prove attractive as that it ought not to do so. 'The Young King' was very well received, and, with the exceptions we have alluded to, justly so. Mr. Farren and Mrs. Nisbett acted remarkably well, and so did Mrs. Glover as long as she had a chance, but her part, which burnt with tolerable brightness in the first act, went suddenly out in the second.

MISCELLANEA

Organography.—The rotatory motion of Rotifera has been differently explained by authors and naturalists. Leeuwenhoeck thought it was caused by two positive wheels; Spallanzani considered these wheels as a series of arms or cilia, circularly arranged, which, by their rapid motion, cause an appearance of rotation; and his opinion has been generally adopted. There is but one of the Rotifera, however, in which this sort of structure may be discovered, the *Tubicolaria quadrilobata*, and which was examined by Schoeffer. M. Dutrochet has submitted it to a new inspection, and finds that its rotatory organ is placed at the open edge of a membraneous funnel, which the animal folds at pleasure into two or four lobes; the mouth is situated at the bottom of this funnel, and these organs of motion are given to the animal in order to make an eddy in the water, which sends the food into the funnel. The organs of motion are round swellings or balls placed alternately upon the edge, so as to give it a resemblance to those sort of ruffs worn in the time of Henry IV.; these alternately undulate with great rapidity, to which they owe the appearance of progressing round the edge of the funnel, and which causes the motion in the water.

Organized Beings.—The Reports of the Academy of Sciences in France have been filled by the voluminous papers of M. Isidore Geoffroy Saint-Hilaire, M. Moquin-Tandon, and M. de Serres; the first treats of the possibility of extending our knowledge of the natural history of man by the study of domestic animals, which, according to the author, will, from its strong affinity with the subject, elucidate many important effects. The second concerns the formation of vegetables, proceeding either from a centripetal or centrifugal force; and the third has for its subject the developement of the genus Rotellina. One and all are based upon the system of M. Geoffroy St. Hilaire, that is, the unity of creation, or the existence of but one great type.

Argonauta.—The long-disputed question of whether the animal found in the shell of the Argonauta be parasitical or not, seems as far from being settled

as ever, notwithstanding the observations of Madame Power (to which we alluded some time back), and the experiments of M. Rang, Captain of the Port of Algiers; the arguments of one side being most ingeniously adopted by the contrary side, in favour of their reasons. All that appears to be certain is, that it swims backwards, like other animals of the same kind, and makes use of its two long palmated arms, with which it envelopes the shell, as if holding it on. A report made to the French Academy of Sciences, on the proceedings of M. Rang, concludes with a request to that gentleman to make the following observations, which we extract for the sake of others who may be inclined to put them in practice:—1st. To make the animal quit the shell, in the manner of Mr. Cranch's experiment, both in and out of water, and especially in the shallow places on the sea shore. 2nd. To ascertain the sexes of the individuals provided with shells, and whether they contain eggs. 3rd. Carefully to examine the position of all the individuals in the shells, whether they are taken from the bottom of the sea or from the surface, and see whether the position be alike in both instances. 4th. To repeat Madame Power's experiment, and ascertain whether the separation made of the broken shell by the animal takes place on the edge of the shell as well as elsewhere, and to note the duration of the experiment. 5th. To examine the nature of the piece of shell thus reproduced with a magnifying glass and with chemical tests, and compare it with the rest of the shell, examined in the same manner. 6th. To repeat the second experiment of Madame Power, if it be possible, and find out if (against all analogy) the shell be not existing in the egg, whether it appears on the animal a few days after birth, and to note all the circumstances of its appearance and developement.

Copenhagen, the charger who carried Wellington at Waterloo.—"He died last year," says Miss Mitford, in her 'Country Stories' just published, "at the age of twenty-seven. He was therefore in his prime on the day of Waterloo, when the duke (then and still a man of iron) rode him for seventeen hours and a half, without dismounting. When his Grace got off, he patted him, and the horse kicked, to the great delight of his brave rider, as it proved that he was not beaten by that tremendous day's work. After his return, this paddock was assigned to him, in which he passed the rest of his life in the most perfect comfort that can be imagined; fed twice a-day, (latterly upon oats broken for him,) with a comfortable stable to retire to, and a rich pasture in which to range. The late amiable duchess used regularly to feed him with bread, and this kindness had given him the habit (especially after her death,) of approaching every lady with the most confiding familiarity. He had been a fine animal, of middle size, and of a chestnut colour, but latterly he exhibited an interesting specimen of natural decay, in a state as nearly that of nature as can well be found in a civilized country. He had lost an eye from age, and had become lean and feeble, and, in the manner in which he approached even a casual visiter, there was something of the demand of sympathy, the appeal to human kindness, which one has so often observed from a very old dog towards his master. Poor Copenhagen, who, when alive, furnished so many reliques from his mane and tail to enthusiastic young ladies, who had his hair set in brooches and rings, was, after being interred with military honours, dug up by some miscreant, (never, I believe, discovered,) and one of his hoofs cut off, it is to be presumed, for a memorial, although one that would hardly go in the compass of a ring. A very fine portrait of Copenhagen has been executed by my young friend Edmund Havell, a youth of seventeen, whose genius as an animal painter, will certainly place him second only to Landseer."

Temperature.—M. Marcel de Serres has written to M. Arago, that at a quarter of a league to the north-west of Montpellier, a large natural well has been discovered; that, in consequence of the position of the calcareous rocks composing the soil, its sides are almost vertical, and in descending it a considerable degree of heat was experienced, which M. de Serres thinks could not arise either from chemical decomposition, or the torches which were taken down by those who were exploring it. According to M. de Serres, the thermal waters, which exist at a certain depth below this soil, send forth vapours, which, by coming through the fissures, heat the cavern; and he is confirmed in this opinion by having actually seen these vapours.

Destruction of Insects.—At the last meeting of the Horticultural Society, a communication was read from Mr. Ingram, of Southampton, on a simple and efficacious method of destroying the red spider, green fly, thrip, and scale, and other insects obnoxious to vegetation, without any injury to the plant. It consisted merely in placing the plants within a frame well closed, and putting between the pots laurel leaves well bruised. After remaining in this state for about an hour it will be found that all the two former insects are destroyed, and the plants must then be removed to a warm place, but a longer exposure to the vapour of the leaves for about eight hours is found necessary for the removal of the thrip and scale. For a house 20 feet long by 12 feet wide, two bushels of leaves are found sufficient, which may be bruised inside; the roof and sides are to be kept close with matting, and the night time is considered best for the purpose of the experiment. The effects are to be attributed to the hydrocyanic acid evolved from the leaves, which agrees with a recommendation made by Mr. Waterhouse, at a late meeting of the Entomological Society, for the destruction of insects in the canvas of pictures or wood of the frames, and in old books, &c., similar to the plan he employs in destroying insects in specimens of natural history. It consists in introducing a few drops of prussic acid into a box closed as tight as possible, and placing therein the infested article, when the destruction of insects will be very quick, as will be seen from their falling down to the bottom of the box, which has sometimes been quite covered with them, although a small quantity only of the acid has been employed.

Instinct of Pigeons.—A Liege journal gives a remarkable instance of the instinct of pigeons:—A pigeon fancier of Verviers went to Turin in 1832, taking with him a number of these birds, which he let loose. A short time ago one of these winged messengers returned safely to Verviers after five years absence.

Teneriffe.—It will be recollected, that we some time ago mentioned the diversity of opinion between several learned travellers, respecting the new map of Teneriffe, by M. Berthelot. Mr. Pentland, who touched at this island on his way to Bolivia, where he holds the appointment of Consul General, was able to make several observations, which confirm the plan of M. Von Buch's map, rather than that of M. Berthelot; the latter gentleman, in conjunction with Mr. Webb, having denied the possibility of seeing the Peak from the south. Mr. Pentland saw it both near to, and far from the island, overtopping the mountains, and has even sent some views of it to the French Academy of Sciences, which were taken from this direction, but which, however, still fail to convince M. Berthelot.

Royal Arsenal.—The original ordnance foundry was situated in Upper Moorfields, London, near the spot where the Wesleyan Chapel now stands, and here the manufactory of munition was carried on until a tremendous catastrophe occasioned the removal of the establishment to Woolwich. In front of the foundry stood some old cannon, the trophies of victories obtained by the English army, under the Duke of Marlborough, over the French; these it was determined to recast, and the circumstance being known, awakened the curiosity of a great number of persons, all anxious to see the conversion of French metal into English guns. A great concourse of people of all ranks assembled, for whose accommodation spacious temporary galleries were erected close to the furnace. Amongst those assembled was a young man named Andrew Schalch, a native of Schaffhausen, in Switzerland, then journeying through England, in consequence of a law of his canton requiring all persons to travel three years for improvement in their profession. Schalch, who was a keen observer, and practically acquainted with mechanics, was upon the ground early in the day, and eagerly examined the different parts of the works; his searching eye soon discovered a defect which involved in it serious consequences. The moulds in which the cannon were to be cast had not been sufficiently dried, and a glance at the laws by which the dispersion of water is governed, convinced the young Swiss, that if not remedied, the result might be terrible. He immediately informed Colonel Armstrong, the Surveyor General of the Ordnance, of the threatened danger, who, after having tested the power of Schalch, by interrogating him upon his knowledge of mathematics, determined to follow his advice and quit the foundry; (!) it does not appear, however, that any steps were taken to apprise the public of the impending peril, nor any extra precautions used to prevent accidents; (!) doubtless the evidence in Armstrong's mind was not sufficient to warrant this. The prediction of Schalch was fully and awfully verified; the instantaneous conversion of the damp into steam on the application of the tremendous heat of the metal, caused a horrible explosion, the heated metal flew about in all directions, and the concussion of air attendant upon so great an explosion, dashed down the galleries and tore off a great part of the roof. Many persons perished, others were dreadfully mutilated, and the scene, so pleasantly begun, terminated in sorrow and confusion. Schalch had retired, but curiosity was strongly awakened concerning the young mechanical seer, and a few days afterwards a notice appeared in the papers requesting him to call at the Ordnance Office in the Tower, and suggesting that the interview might be advantageous. Schalch, apprised of this circumstance by a friend, waited on Colonel Armstrong, and the result of the meeting was, that the Colonel commissioned him in the name of the government, to seek out some spot within twelve miles of the Metropolis, to which the whole manufacture of Ordnance might be transferred. Scalch fixed on the Warren at Woolwich, to which the whole was immediately removed, and suitable buildings were erected, which have been increased and enlarged from time to time. The young Swiss was appointed superintendent of the whole concern, which office he continued to hold for sixty years; during which time, so admirable were the arrangements made, and so extensive the knowledge displayed, not one single accident occurred. He died at the advanced age of ninety years (in 1776), and was buried in Woolwich church-yard.—*Woolwich Guide.*

Effect of Prussic Acid on a Rabbit.—At the conclusion of a lecture delivered at Maidstone by Dr. Robinson on poisons, the effect of prussic acid was tried upon a rabbit. Three drops were administered from a glass (the surface of which most probably abstracted half the quantity), and the animal immediately exhibited the usual symptoms of immediately approaching dissolution. In order to give it a chance of recovery, however, a few drops of ammonia were administered, without apparent benefit. A constant stream of cold water was then poured upon the base of the skull, and along the spine, when the animal very shortly exhibited symptoms of resuscitation. It was then wrapped in warm flannel. In a quarter of an hour it was sufficiently recovered to walk. Dr. Robinson mentioned that this mode of treatment had been discovered by accident. A cat, which had annoyed the apprentices of a chemist, was poisoned by them with prussic acid, and thrown by for dead. By mere accident, however, it fell under a stream of water which was pouring from a pump, the effect of which was its gradual resuscitation. Benefiting by this hint, the same means have been successfully applied to more than one human subject who had taken prussic acid. No instance, however, had come within Dr. Robinson's knowledge where an animal had been restored after the symptoms which this rabbit exhibited. The rabbit is now in full health and vigour.—*Chronicle.*

TO CORRESPONDENTS.

In consequence of the facilities afforded for the transmission of English journals to the Continent, the STAMPED ATHENÆUM is now forwarded direct from the London Office. Subscriptions, for not less than Three Months, to be paid in advance, will be received, as heretofore, by M. Baudry, 9, Rue du Coq-St.-Honoré, Paris; and by our Publisher, at 2, Catherine-street, Strand, after the following rates, *regulated by the Post Office charges*:—

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